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WILDLIFE REVIEW

NUMBER 71 FEBRUARY 1953

UNITED STATES DEPARTMENT OF THE INTERIOR

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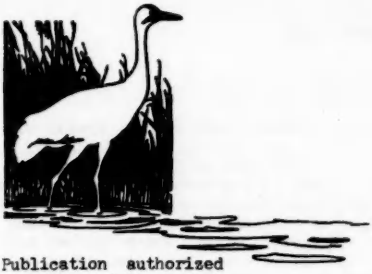

Publication authorized
by Bureau of the Budget
August 19, 1952

WILDLIFE REVIEW

An abstracting service for wildlife management
issued for the information of cooperators
by the Fish and Wildlife Service
United States Department of the Interior

PATUXENT RESEARCH REFUGE
LAUREL, MARYLAND

Number 71 February 1953

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NOTICE: PUBLICATION DATES OF WILDLIFE REVIEW

Dates of numbers 67-69 represented estimated dates of publication, but publication actually was some months later. Date of manuscript completion was therefore used for number 70 and the present number; we expect to continue this system with future issues.

Except as indicated, abstracts are by William H. Stickel, editor.

WILDLIFE--BIBLIOGRAPHY, BIOGRAPHY, HISTORY

Collier, Eric. WILDERNESS ADVENTURE. Outdoor Life 109(1): 13-15, 44-49, illus. Jan. 1952.
When the author took over the Meldrum Creek area in British Columbia, beaver had long since been exterminated, the valley had dried out and burned over, much game had vanished, and agriculture had failed. Subsisting as a guide and trapper, the writer installed artificial beaver dams to restore water levels and reintroduced beaver. Muskrats, minks, and waterfowl soon flourished and other game increased. Beavers gradually multiplied until trapping them was practical. Barriers on and near streams were used to discourage beavers from leaving the management area. Strict control of wolves, coyotes, and horned owls is said to have given much increased breeding success for game and fur-bearers.

Schaffer, Dick. INDIAN HUNTING. Outdoor Nebraska 31(1): 3-6, illus. Winter [Jan. 1953.]
How the Sioux protected, hunted, and utilized game. Based largely on an interview with an old Indian. The Sioux had their own hunting seasons with severe penalties for violations.

University of California. CATALOG-CHECKLIST, UNIVERSITY OF CALIFORNIA PUBLICATIONS IN ZOOLOGY. University of California Press, Berkeley 4, Calif. 1-41 p. 1952.
Lists papers of series named that are still in print. Gives full citations and states prices.

Wagoner, J. J. HISTORY OF THE CATTLE INDUSTRY IN SOUTHERN ARIZONA, 1540-1940. University of Arizona (Tucson), Social Science Bulletin no. 20. 132 p., illus. April 1952. $1.25. [From Journal of Forestry 50(12).]

Williams, Jay P. ALASKAN ADVENTURE. Stackpole Co., Harrisburg, Pa. xiii + 299 p., illus. 1952. $4.50. [From review by S. P. Young, Journal of Mammalogy 33(4).]
According to Young's review, the author "has brought together between the covers of a book Alaska's out-of-doors as has no other individual. His phraseology, clearness of description, and wit are of the kind that once the reader begins to peruse the volume, there is no laying it aside for some other time. I know of no running account that describes in such detail the natural history concerning Alaska's grizzlies and brown bears...His chapter on the Rocky Mountain goat, in the opinion of this reviewer, contains the best natural history on this animal yet in printer's ink." Two chapters, in the appendix, deal with equipment and techniques for traveling and camping in the north.

WILDLIFE--EDUCATION

Jackson, Bud. CONSERVATION'S MISSING LINK--THE WILDLIFE JOURNALIST. Transactions of the 17th North American Wildlife Conference. p. 510-519. 1952.
"It is doubtful if there exists a phase of human endeavor which receives as inadequate an amount of accurate and helpful publicity today as the work of resource conservation." Technical men rarely can write popularly. Writers seldom know enough biology and some of them are superficial in their interests. We should train hybrids--men trained in biology and public relations. A promising approach, which the National Wildlife Federation hopes to try, is to give graduate wildlife men postgraduate scholarships in public relations. The management agencies are urged to support such programs.

Mahaffey, Juanita. CROSS EXAMINATION OF THE CONSERVATION MAGAZINE. Transactions of the 17th North American Wildlife Conference. p. 519-524. 1952.
Survey of state conservation magazines: size, cost, editors' qualifications and duties, circulation, influence, policies.

WILDLIFE--EDUCATION--Continued

Shomon, Joseph James. EDUCATION IN RESOURCE USE: OUR MOST CHALLENGING TASK IN HUMAN RELATIONS. Transactions of the 17th North American Wildlife Conference. p. 525-532. 1952.
Stresses the urgency of resource conservation and the great need for intensive education of the public about it. Among the concrete suggestions are: expanded and unified information efforts; use of trained biologists in information work; PR and DJ funds for public relations projects; training all personnel in conservation education so that all employees will be able and willing to give the public the broad picture.

Walsh, Bill. GOOD NEIGHBORS--THE WILDLIFE MANAGER AND THE OUTDOOR WRITER. Transactions of the 17th North American Wildlife Conference. p. 503-510. 1952.
The biologist can best reach the public through the outdoor writer, and most writers are anxious to serve in this way. But before the writers can function effectively, each conservation organization should have: (1) a central information office, and (2) a regularly issued newsletter giving the facts, the figures, and the reasons behind them. It is interesting to note that the 10 leading sporting magazines reach only 4 million of the 30 million U. S. sportsmen. Importance of writers for daily papers is evident.

WILDLIFE--TECHNIQUES

Aldrich, R. C. ACCURACY OF LAND-USE CLASSIFICATION AND AREA ESTIMATES USING AERIAL PHOTOGRAPHS. Journal of Forestry 51(1): 12-15. Jan. 1953.

Chapman, Douglas G. SOME PROPERTIES OF THE HYPERGEOMETRIC DISTRIBUTION WITH APPLICATION TO ZOOLOGICAL SAMPLE CENSUSES. Univ. Calif. Public. Statist. 1(7): 131-160. 1951. [From review by C. H. Blake, Bird-Banding 23(4).]
"A discussion of certain estimates of the size of a finite population by sampling without replacement. In the specific cases it is assumed that the whole number of individuals marked is less than the number of all individuals in the sample (which is unduly restrictive). The two special cases are size from a single sample and comparison of population sizes."

Kempthorne, Oscar. THE DESIGN AND ANALYSIS OF EXPERIMENTS. Wiley, N. Y. (Chapman and Hall, London). xix + 631 p. 1952. $8.50. [From review by J. S. Hunter, Scientific Monthly 75(2).]
Comprehensive and authoritative statistical text.

Smith, Frederick E. EXPERIMENTAL METHODS IN POPULATION DYNAMICS: A CRITIQUE. Ecology 33(4): 441-450. Oct. 1952.
Mathematical and theoretical considerations for advanced workers in this specialized field.

WILDLIFE--NATURAL AREAS

Harkness, W. J. K. ZONING NEEDS FOR WILDERNESS AREAS. Transactions of the 17th North American Wildlife Conference. p. 13-20. 1952.
Problems and needs. Canadian practices described.

Heald, Weldon F. REPORT FROM THE GILA. Living Wilderness 17(42): 26-29, illus. Autumn 1952.
Tells how proposed reductions in the Gila Wilderness Area of New Mexico were vigorously opposed by aroused local citizens and national organizations. Public sentiment was amazingly strong. It is excellent evidence that potent support for preservation of natural areas can be mobilized. Following articles (30-39 p.) give more information on the subject.

WILDLIFE--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Beecher, William J. THE UNEXPLAINED DIRECTION SENSE OF VERTEBRATES. Scientific Monthly 75(1): 19-25, illus. July 1952.
Discusses various theories of direction-finding, with special reference to birds and mammals, and contributes original information on the importance and adaptation of the ear. "Available evidence suggests that the direction sense is most highly perfected in animals of the fluid media - air and water - animals in which the outer ear is either lacking or may be closed against pressures incidental to movement through the media. A certain amount of circumstantial evidence thus supports the theory that the inner ear may detect Coriolis force and employ it as a compass." 51 references.

Latham, Roger M. TOO SMART TO KILL! Hunting and Fishing 29(9): 20-21, 56-59, illus. Sept. 1952.
Maintains that many kinds of game animals are developing habits that make them much harder to shoot than they used to be. The chief cause is thought to be the selective effect of hunting, with education of individuals a lesser factor. The author also points out that trophy shooting is contributing to deterioration of big game quality.

Lorenz, Konrad Z. KING SOLOMON'S RING. NEW LIGHT ON ANIMAL WAYS. (Translated from German by Marjorie Kerr Wilson.) Crowell, N. Y. 202 p. 1952. $3.50. [From review by M. M. Nice, Bird-Banding 23(4).]
"This is a wonderful book on animal behavior, written with charm and spirit and humor, full of engrossing stories that are all true. Dr. Lorenz's deep sympathy with animals from water beetles to apes and his clear insight into their behavior are apparent on every page. We read amazing stories of the love life and family care of fishes, of the extraordinary adaptations of water shrews, of the characteristics of the two strains of domesticated dogs, and of the complicated social responses of Jackdaws—a most important contribution to ornithology...This is a book for all animal lovers and all students of animals; it will delight and instruct them."

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY

Barnes, W. B. ZOOGEOGRAPHIC REGIONS OF INDIANA. American Midland Naturalist 48(3): 694-699, map. Nov. 1952.
Outlines and describes 11 zoogeographic regions of the state, with comments on game conditions in each. No comparison with other systems of natural area classification is presented.

Bierne, B. P. THE ORIGIN AND HISTORY OF BRITISH FAUNA. The British Book Centre, N. Y. 164 p. 1952. $4.00. [From Nature Magazine 45(10).]
"In this book the author discusses the development of British Fauna from earliest times to the present day, particularly emphasizing mammals, birds, butterflies, and moths. It is a book for ecologists, students and teachers, and its many distribution maps are particularly valuable."

Dowdeswell, W. H. ANIMAL ECOLOGY. Methuen, London. xv + 207 p. 1952. 12s. 6d. [From review by E. S. Deevey, Ecology 33(4).]
An accurate and stimulating textbook that "would be suited to American college freshman, but is intended for a rather different group of students. Despite its simplicity and despite its concentration on animals and environments peculiar to Great Britain, it could even be used as the skeleton of a more advanced course in an American college, for it provides an extensive and carefully chosen bibliography not by any means confined to popular works."

Engels, William L. VERTEBRATE FAUNA OF NORTH CAROLINA COASTAL ISLANDS. II. SHACKLEFORD BANKS. American Midland Naturalist 47(3): 702-742, illus. May 1952.
The author describes this island and its history and habitats, and discusses its vertebrate species and the ways in which they reached the island. Shackleford is an off-shore bar that has acquired its fauna over-water from

WILDLIFE--BIOTAS, COMMUNITIES, GENERAL ECOLOGY--Continued

the mainland. The island is sandy, easily altered by hurricanes, wave action, and wind. Timber cutting, fires, and feral livestock also have affected the island. Not more than 40 species of land vertebrates--exclusive of shore and aquatic birds--occur on the island as against about 186 species on the adjacent mainland. The difference is owing partly to the small number of habitats on the island, partly to failure to reach the island. The occurrence of each resident species is discussed.

Grater, Russell K. BIRTH OF A LAKE. Nature Magazine 45(10): 512-516, 550, illus. Dec. 1952.
When the Lake Mohave reservoir (on Colorado River in Nevada) first began to fill in February 1950, study was made of the animals being flooded out. This paper describes the behavior and probable fate of many kinds of animals, chiefly mammals, when trapped on islands or forced onto barren slopes. Water birds soon began using the new lake in droves.

Jorgensen, Arthur W. WISCONSIN WILDLIFE. Wisconsin Conservation Department, Publication 613-50. 1-64 p., illus. No date. [1950?]
A popular, educational bulletin apparently intended for school use. It tells of the values of many forms of wildlife and contains much general information about them. Some features of the paper are: List of all mammals with indication of range in state, habitat, and status. Value and numbers of fur-bearers taken 1948-49. Habits of game fishes. Figures on rough fish removal, 1949. Harvest of each type of game bird, 1948-49. Tabular information on habits of game and other birds. Statement of factors harmful to wildlife. Things that can be done to aid wildlife.

Musser, Francis B. AN ECOLOGICAL STUDY OF THE MOTHERSBAUGH SWAMP OF HUNTINGDON COUNTY, PENNSYLVANIA. M. S. thesis, Pennsylvania State College, August 1951.

WILDLIFE--MORTALITY FROM INSECTICIDES, WEATHER, CARS, ETC.

Crabtree, D. Glen and William H. Robison. WARFARIN AND ITS EFFECT ON SOME WILDLIFE SPECIES. Transactions of the 17th North American Wildlife Conference. p. 167-173. 1952.
Reports experiments with various rodents, skunks, coyotes, and chukar partridge. Most mammals but none of the chukars were killed. Very few cases of secondary poisoning are known. Warfarin appears useful in field-rodent control, where the cost is justified, and may be of value in predator control. It should be especially good where rodents are to be killed in the presence of game birds.

Gotink, W. M. and F. W. van Hulsen. A MASSIVE MORTALITY OF GAME ANIMALS BY POISONING WITH ZINC PHOSPHIDE. Tijdschr. voor Diergeneesk. 77: 224-229. 1952. [From notice by "L.V.E." in Journal of the American Veterinary Medical Association 121(908).]
"The examination of dead fowl revealed that during a dry period poisonous wheat kernels had been scattered about for the destruction of field mice. Wild geese suffered the most (500 to 1,000 of a total of 7,000 died) but a considerable number of ducks, partridges, and hares were also poisoned."

Hall, David G. OUR FOOD SUPPLY, WILDLIFE CONSERVATION, AND AGRICULTURAL CHEMICALS. Transactions of the 17th North American Wildlife Conference. p. 26-33. 1952.
These chemicals are of great value to us and if properly used they do no great harm to man or wildlife. The problem is to educate people to use them properly.

WILDLIFE--MORTALITY FROM INSECTICIDES, WEATHER, CARS, ETC.--Continued

Mills, Herbert R. DEATH IN THE FLORIDA MARSHES. Audubon Magazine 54(5): 285-290, illus. Sept.-Oct. 1952.

Reports the effects of operational spraying for mosquito control on 4000 acres of salt marsh and about 50 miles of shore line in the Tampa Bay area. Aerial applications of DDT in fuel oil were made 11 times during the summers of 1950 and 1951 at the rate of 0.2 lbs. per acre. Wildlife mortality was first noted after the third treatment. Following each succeeding treatment, fiddler crabs, blue crabs, killifish, beneficial insects, frogs, lizards, and water snakes were killed in increasing numbers and at shorter intervals. During the same period mosquitos reportedly increased, possibly as a result of fewer predators and resistance to DDT. The author suggests that bird populations also declined, although no figures are given. [The potential hazards of routine insecticide applications clearly point the need for increased research based on carefully planned before-and-after studies in treated and comparable untreated plots to determine direct and indirect effects, both immediate and long term.]--Paul F. Springer.

WILDLIFE--MANAGEMENT--GENERAL

Allen, Durward L. WILDLIFE MANAGEMENT. Boy Scouts of America (2 Park Ave., N. Y. 16, N. Y.), Merit Badge Series. 1-95 p., illus. 1952. 25¢.

Anyone wishing a brief but modern and authoritative review of wildlife management will find this booklet readable, factual, and a bargain. It is simple and interesting, as suitable for adults as for intelligent scouts, and might well be given wide educational use. Concepts such as successions, food chains, population surpluses, habitat requirements and land fertility are used to show why the many management measures described are worthwhile, and why predator control and stocking are often wasteful. Both land and water environments are discussed. Instructions are given for projects that individual scouts can undertake. The merit badge requirements listed have enough alternatives that any boy with access to the country should be able to meet them.

Berner, Lester M. BIG GAME MANAGEMENT ON STATE PARKS. South Dakota Conservation Digest 19(11): 11-13, 16. Nov. 1952.

A long and thoughtful paper based in part on a nationwide questionnaire about practice and principle, and in part on knowledge of the effects of herbivore overpopulations. The state park objective is to keep the fauna and flora as nearly in its original condition as possible. This aim is frequently defeated by tolerance of deer, beaver, and other herbivore populations that are large enough to injure the vegetation. Resulting conditions are far from natural, and eventually the animals themselves may suffer from overpopulation. Controls should be planned before they are needed and range conditions should be constantly checked. Park men and game men should cooperate in this. Controls, preferably controlled public hunting, should be instituted before any native plant is eliminated and certainly before the situation becomes acute. Native plants and animals may well be reintroduced, and clearings may be made to simulate the effects of fire and insect damage, but exotic plants and animals should not be introduced.

Bevan, E. G. HALEYVILLE-MILLVILLE TRACT DEVELOPMENT. New Jersey Outdoors 3(3): 11-17, illus. Sept. 1952.

A long article telling of the many farm and forest wildlife management measures being employed on this 9150-acre public hunting ground. Almost every conceivable method of encouraging upland game is being used, usually on a large scale. Wildlife populations are said to be improved, but no evaluation of results is given.

WILDLIFE--MANAGEMENT--GENERAL--Continued

Cahalane, Victor H. ONE WORLD: A COMPARISON OF GAME RESOURCES AND MANAGEMENT IN AFRICA AND AMERICA. Transactions of the 17th North American Wildlife Conference. p. 458-471. 1952.
Contains much interesting information on African reserves and preservation, and on management and control of African big-game. Conditions and attitudes in many regions are outlined.

Dambach, Charles A. HABITAT IMPROVEMENT SHOULD BE EVALUATED. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-5 p. 1951.
Cost of habitat improvement is often prohibitive for results obtained. If we do not evaluate these programs now to see if they are justifying themselves, the roof may fall in on us in a few years. Cost of installation and maintenance must be appraised in terms of additional units of game bagged. On this basis, habitat improvement may be as costly as stocking for the gun.

DeLime, John L. LIVE TRAPPING AND RESTOCKING. Kentucky Division of Game and Fish. 1-35 + 9 p., illus. July 1951.
A detailed report on methods, costs, and results of trapping and restocking deer, turkey, beaver, and raccoon in Kentucky. Deer and turkey were taken from the Kentucky Woodlands Refuge, while beaver came from near by states. Raccoon trapping was incidental, but some effective methods were developed and many were caught. Much of the restocking was successful. Attempts to restock bears were discontinued, partly because of public protest. A serious deer epidemic caused by Clostridium septique was observed in 1949.

Egler, Frank E. TRANSMISSION LINES AS WILDLIFE HABITAT. The Land 11(2): 149-152. Summer 1952.
Power line right-of-ways can be extremely useful to wildlife, for they diversify the habitat and offer an enormous amount of "edge." They are of little value if clear-cut or blanketed with herbicide, as some are. But selective basal-bark herbicide treatment of woody plants makes possible low cost creation and maintenance of conditions that please both power companies and game biologists. The mutually desired objectives are: "(1) a central foot or truck trail; (2) shrubs and coarse herbs (or grass when nothing better is available) less than waist high over the major part of the right-of-way; (3) tall shrubs and low trees at the sides, that will not grow into the wires." Many of the plants that occur naturally are of great wildlife value. Wise ecological planning and supervision is necessary, but, "For any one acreage, I have not yet seen a situation that could not be handled by a laborer of average intelligence." Basal-bark control techniques can be applied to many other situations and costs less than most other habitat-management measures.

Elliott, Charles. THE BUILDERS. Outdoor Life 109(2): 40-41, 99-102, illus. Feb. 1952.
The interesting and encouraging story of how a group of hunters in Paulding County, Georgia, organized and managed a huge hunting preserve on multiply-owned private lands where game laws had been a joke and large game animals had been shot out. The men convinced their neighbors, raised funds, got game completely protected for 5 years, introduced deer, and solved with shrewdness and tact the many personal problems that arose. Fires, once common and destructive, were closely controlled. Predators were thinned out, access roads were built, artificial lakes were impounded. Turkey and trout introductions failed, but new turkey releases will be tried, and the first deer are to be harvested in 1952. The spirit of cooperation and progress engendered by the conservation project has spread to other community affairs.

WILDLIFE--MANAGEMENT--GENERAL--Continued

Gabrielson, Ira N. FUTURE OF THE WILDLIFE PROFESSION. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-5 p. 1951.

Moore, Paul. THE AUGUST GAME SURVEY--1952. Ohio Division of Wildlife, Leaflet no. 25. 13 p., maps and graphs. Sept. 1952.
The Ohio pre-hunting surveys are now made by state personnel taking road counts in each township at certain times. The method has been most useful in measuring relative population levels of game birds; its value for mammals has not been thoroughly demonstrated. The present report presents the 1952 survey counts for all kinds of game birds and mammals breeding in the state, and also for crow and woodchuck. Maps show local abundance and distribution of game birds and cottontail, often comparing 1951 and 1952. A graph shows times of pheasant hatching in 1951 and 1952. Pheasants, cottontails, and squirrels are low. Bobwhite and dove, neither hunted, are abundant in large areas of the state.

Morgan, H. R. GARRISON DAM AND WILDLIFE VALUES! North Dakota Outdoors 15(5): 6-7, 16. Nov. 1952.
Strong, detailed statement by the North Dakota Game and Fish Commissioner on the effect of Garrison Dam on wildlife and habitats, and on the failure of the Corps of Engineers to carry out even the wildlife measures it had agreed upon. Text of talk given before President's Water Commission.

WILDLIFE--MANAGEMENT--HARVESTS AND HUNTING

Barnes, W. B. INDIANA'S 1951 GAME HARVEST. Outdoor Indiana 19(11): 2-3, graph. Nov. 1952.
The 1951 small game and waterfowl harvest is discussed, but of greater value is a table of estimated kill of rabbit, squirrel, quail, pheasant, Hungarian partridge, ducks and coots, geese, and woodcock in the state for the years from 1943 to 1951. There is also a graph showing average kill per hunting effort of these forms of game (except geese and woodcock) from 1940 to 1951. "It is evident that hunting pressure continues to be high, making it necessary for our wildlife resources to be distributed in lower numbers per hunter. Destruction of good habitat continues at an alarming pace."

Gale, Larry R. GAME TRENDS CONTRADICTORY. Kentucky Happy Hunting Ground 8(5): 8. Sept. 1952.
Report on 1951-52 Kentucky small game harvest and discussion of trends in recent years. Bobwhite is gradually decreasing. Rabbits have increased but seem to be levelling off. Squirrel populations fluctuate rapidly and no long-term trend is evident. The kill of doves dropped almost by half in 1951. Ruffed grouse populations are nearly static but the occupied range is gradually widening.

Frye, O. Earl. FLORIDA'S PUBLIC HUNTING PROGRAM. Florida Wildlife 6(6): 10-11, 44-45, illus. Nov. 1952.
Florida has 1,691,000 acres of land open to managed public hunting. Part of the land is state or federal, the rest is private land managed by the state for hunting. Part of the cost of operating public hunting areas is obtained from the $5 public hunting stamp, which entitles its owner to participate in most of the public hunts. This article tells about the different areas and the benefits that have accrued from them. The author believes that the day of free hunting is largely over, and that the problem is to supply hunting at a price the average man can pay.

McKean, John W. CURRENT GAME PROBLEMS. Oregon State Game Commission Bulletin 7(6): 3-7, illus. June 1952.
Discusses the difficulties in weighing biological factors against other considerations in setting regulations for various types of hunting. Gives results of 1951 hunting in Oregon for antelope, pheasant, quail, and waterfowl. Includes tables giving (by counties) 1951 hunting statistics for deer and elk.

WILDLIFE--MANAGEMENT--HARVESTS AND HUNTING--Continued

Moore, Paul. THE 1951 OHIO GAME KILL. Ohio Division of Wildlife, Leaflet no. 26. 1-5 p. Oct. 1952.
Based on 3,976 returns from 10,000 questionnaires. Tables show number of successful hunters; hunting statistics and estimated state-wide kill for each type of small game; estimated state-wide kill, 1946-51, of rabbit, pheasant, fox squirrel, and gray squirrel; average kill per hunter of each type of small game or fur-bearer for the years 1932-33 and 1946-51. The kill of pheasants was lower than in 1950. The kill of rabbits was down for the second consecutive year--54% of the 1949 kill. The estimated bag of raccoons was 100% greater than that of 1950. The muskrat harvest was the highest of any post-war year.

Priaulx, Arthur W. HUNTER'S PARADISE IMPERILED. American Forests 58(11): 6-9, illus. Nov. 1952.
Gives many examples of destructive behavior by hunters in the Northwest. Tree farmers need a suitable big game harvest for the sake of the timber, but hunter behavior is leading to more and more forests closed to hunting. Effective education and enforcement are needed, but no good way to provide either is evident.

Whitesell, Dale E. AN ANALYSIS OF THE FARMER-HUNTER PROBLEM IN OHIO. Transactions of the 17th North American Wildlife Conference. p. 533-539, illus. 1952.
A statistically controlled study gave data on: amount of land open, restricted, or closed to hunting in Ohio; incidence of different types of damages and nuisances caused by hunters. Only 3.9% of the land is actually closed. Nuisances (itemized) cause more trouble than damages. Damages proved less than might be expected; 66% of complaints are about fences, but more than 16% are about livestock injury.

WILDLIFE--MANAGEMENT--FARM

Allen, Durward L. WILDLIFE AND THE BUSINESS OF FARMING. Journal of Soil and Water Conservation 7(5): 223-226, 245, illus. Nov. 1952.
Plans for wildlife must be secondary to plans for crops, but some sound farm practices help wildlife. We should realize that brushy growth has its place on the farm and that clean farming is not always the best farming. The proper attitude toward wild vegetation is "Leave it where you don't have to remove it." "Waste areas" are better termed "wildlife land." We speak glibly about "habitat improvement," and we apply it wholesale with little knowledge of just what it will do or how long it will last. Much more research on habitat improvement is needed. Better methods for given sites and given animals are badly needed. Rights of the farmer to protection from hunters require far better protection in most states.

Allen, Durward L. WILDLIFE HISTORY AND THE SOIL. Soil Conservation 18(6): 123-127, illus. Jan. 1953.
The author gives examples to show (1) that abundance and condition of animals is dependent on land fertility; and (2) that while strictly forest animals suffered with the opening of the forests, many others reached their greatest abundance in the days of early settlement when there was much fertile soil and much interspersion of habitats. Habitat improvement, which is based on these principles, certainly can be made to work and some of it does work, when well adapted to needs of the site. "The prime necessity now is to recognize the usefulness of wildlife and give it consideration as a by product of farming. As one point of departure, we can well afford to allow brushy cover to grow in 'odd corners' where it is not in the way of agricultural operations. That is the easiest and most practical kind of wildlife management."

WILDLIFE--MANAGEMENT--FARM--Continued

Anonymous. FOOD FOR WILDLIFE. North Carolina Wildlife Resources Commission, Bulletin no. 1. 1-12 p., illus. Revised 1951.
History, value, and planting methods for bicolor and sericea lespedeza and multiflora rose. A guide for the landowner or sportsman.

Dziedzic, Eugene S. and Chester C. Ball. WHEATLAND WILDLIFE. Washington State Game Department, Biological Bulletin no. 10. 1-33, illus. April 1950. [1952]
Written for Washington landholders, this popular booklet is well illustrated with photographs and cartoons. It tells in detail what the habitat requirements of game birds are, what the farmer can do to encourage game, and what the State Department of Game will do to help. The paper deals entirely with upland game birds of the grain-raising areas of Eastern Washington, but most of the recommendations apply to crop lands elsewhere.

Jameson, Harold and James Wheeler. USE OF 2,4-D IN RELATION TO AVAILABILITY OF GAME BIRD FOOD. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-3 p. 1951.
2,4-D used in corn fields was less effective in reducing total weed seed production than was normal cultivation. It did, however, decrease production of ragweed and lambsquarters seeds, which are important to game, and increase production of the less valuable grass seeds.

Musselman, Harold E. A WILDLIFE MANAGEMENT PLAN FOR THE PENNSYLVANIA STATE COLLEGE FARMLANDS. M. S. thesis, Pennsylvania State College, 1951.

Terrell, Edward E. and Cyril Kabat. A SURVEY OF MULTIFLORA ROSE PLANTINGS IN WISCONSIN. Wisconsin Conservation Department. 19 p., map and graphs. Sept. 1952.
Reports the degree of success or failure of different plantings and provides suggestions for good plantings. This rose is not sufficiently hardy for Wisconsin, but is potentially one of the best wildlife plants for the southern part of the state, where a few plantings have thrived. Factors determining success are discussed. Selection of hardy strains or hybrids is promising and is under way.

Yeager, Lee E. GRAIN-FED GAME IN COLORADO. Colorado Conservation 1(3): 25-28, illus. May-June 1952.
Facts and figures on the value of waste grain to small game. "Cessation of grain farming would automatically destroy most small-game hunting, as we know it, in this or in any other state."

WILDLIFE--MANAGEMENT--WET-LAND

Ball, Robert C. FARM-POND MANAGEMENT IN MICHIGAN. Transactions of the 17th North American Wildlife Conference. p. 221-225. 1952.

Bell, James G. HORICON MARSH: A DECADE OF MANAGEMENT. Wisconsin Conservation Bulletin 17(10): 7-10, illus. Oct. 1952.
Tells of the improvements that have been made and of the increased waterfowl and muskrat use that has resulted.

Brumsted, Harlan B. and Oliver H. Hewitt. EARLY INVESTIGATIONS ON ARTIFICIAL MARSH DEVELOPMENT IN NEW YORK. Transactions of the 17th North American Wildlife Conference. p. 259-268, illus. 1952.
Progress of the small marsh program; response of vegetation to flooding; site preparation; water level control; response of wildlife. Desired plants may become established in a year or two. Waterfowl use the areas soon and heavily. Four to 13 muskrats per acre can be harvested in the first season after marsh establishment. Other values are also appearing and the program is considered a great success.

WILDLIFE--MANAGEMENT--WET-LAND--Continued

Bue, I. G., Lytle Blankenship, and William H. Marshall. THE RELATIONSHIP OF GRAZING PRACTICES TO WATERFOWL BREEDING POPULATIONS AND PRODUCTION ON STOCK PONDS IN WESTERN SOUTH DAKOTA. Transactions of the 17th North American Wildlife Conference. p. 396-414, illus. 1952.

Two years of study reveal that waterfowl use of stock ponds is less where the surrounding range is overgrazed. The cure is proper grazing pressure or fencing parts of the ponds. Data are given on waterfowl populations of stock ponds, and on effect of varied grazing pressures on the vegetation.

Cottam, Clarence and Warren S. Bourn. COASTAL MARSHES ADVERSELY AFFECTED BY DRAINAGE AND DROUGHT. Transactions of the 17th North American Wildlife Conference. p. 414-421. 1952.

Reviews ecology of coastal marshes and points out (with special reference to Louisiana) that they are being ruined wholesale by mosquito control, navigation, farming, grazing, irrigation, and resort development. Many of these changes are economically unsound and result in great loss of valuable wild animals.

Davidson, Joseph B. RESTORATION OF ILLINOIS WET LANDS WITH THE AID OF P-R. Transactions of the 17th North American Wildlife Conference. p. 237-241. 1952.

Account of 3 waterfowl management areas, 2 successful, 1 unsuccessful. Need for thorough advance investigation is stressed.

Dean, Frederick Chamberlain. ECOLOGY OF AQUATIC PLANTS OF IMPORTANCE IN WATERFOWL MANAGEMENT (WITH SPECIAL REFERENCE TO FIVE MONOCOTYLEDONOUS SPECIES IMPORTANT AS FOOD PLANTS TO DUCKS IN MAINE). v + 136 p., illus. M. S. thesis, University of Maine. June 1952.

At 67 localities in the southern 2/3 of Maine, habitat factors were studied for Sparganium americanum, S. chlorocarpum, Potamogeton natans, Zizania aquatica var. augustifolia, and Scirpus subterminalis. In five state waterfowl management areas observations on changes in vegetation caused by the flooding of land that had been dry for many years led to recommendations that excess organic matter should be removed and the soil plowed, disced, or scraped before an area is flooded; that artificial islands should be built with gently sloping sides and provided with vegetation; and that for maximum production of aquatic food plants most of the water should be less than 30 inches deep and should not deepen during the flowering and early fruiting stages.--Neil Hotchkiss.

De Gruchy, James H. B. WATER FLUCTUATION AS A FACTOR IN THE LIFE OF THE HIGHER PLANTS OF A 3300 ACRE LAKE OF THE PERMIAN RED BEDS OF CENTRAL OKLAHOMA. Ph. D. thesis, Oklahoma A. & M. College, May 1952.

Fredine, C. Gordon. WILDLIFE'S PLACE IN A WET-LAND-USE PROGRAM. Transactions of the 17th North American Wildlife Conference. p. 106-115. 1952.

Tells of the extensive marsh-drainage now accomplished or proposed and tells how the Fish and Wildlife Service is attempting to meet the problem. The threat to wildlife, especially waterfowl, is great. No easy solution exists. We need wise national policies and a cooperative approach by all interests.

Schultz, Vincent. A LIMNOLOGICAL STUDY OF AN OHIO FARM POND. Ohio Journal of Science 52(5): 267-285, illus. Sept. 1952.

Based on doctoral thesis, "A limnological study of a farm pond," Ohio State University, 1949.

Zeller, Howard Duane. INORGANIC NUTRIENT LEVELS IN FERTILIZED AND UNFERTILIZED FARM PONDS IN CENTRAL MISSOURI. M. S. thesis, University of Missouri, 1952.

WILDLIFE--MANAGEMENT--PREDATION, CROP DAMAGE, AND CONTROL

Anonymous. BOUNTY PAYMENTS 1951-52 EXCEED $122,000. Wisconsin Conservation Department, Activities Progress Report no. 52: 9-10. Nov. 1952.
Numbers of coyotes (including wolves), wildcats (including lynxes), red foxes, and gray foxes bountied in Wisconsin and amounts paid. Separate data are given for the 10 counties in which the most bounties were paid. Over the state, claims were up 35% for red fox and 40% for wildcats, but down slightly for coyotes and down about 10% for gray fox.

Howard, Walter E. WILDLIFE CONTROL--DEPREDATIONS ON SEEDINGS REQUIRE PROTECTIVE ACTION. Western Livestock Jour. 29(27): 92-94. April 15, 1951. [From Journal of Mammalogy 33(4).]

Latham, Roger M. THE BOUNTY SYSTEM IN WILDLIFE MANAGEMENT WITH PARTICULAR REFERENCE TO THAT OF PENNSYLVANIA. M. S. thesis, Pennsylvania State College, June 1951.

WILDLIFE--REPORTS OF ORGANIZATIONS

Carpenter, Ralph G., 2nd. BIENNIAL REPORT OF THE NEW HAMPSHIRE DEPARTMENT OF FISH AND GAME, JULY 1, 1950 TO JUNE 30, 1952. 1-63 p., illus. 1952.
Includes: research plans; graph of 1951 waterfowl migration peaks; reports of 1950 and 1951 fur-bearer catches; considerable information on deer kill and deer management; pheasant propagation data; ratings of hunter success for major game species (grouse at top of cycle); and discussions of educational and fisheries projects.

Handley, Charles O., Sr. GAME MANAGEMENT. [Section of annual report of West Virginia Conservation Commission.] West Virginia Conservation 16(7): 36-43, illus. Oct. 1952.
Brief, factual reports on management and research projects: farm game management; management on Monongahela National Forest; management on state-owned lands; stocking of raccoon, quail, chukar, and beaver; habitat analysis and mapping on state-owned lands; studies of deer, bobwhite, turkey, gray squirrel, beaver, bear; mast census; studies on Point Pleasant Management Area and Hampshire County Study Area. Many data, including hunting statistics by counties, are given for the 1951 deer hunts. Reported turkey kill in 1951 was 886, highest in recent years. Bears are being shot out rapidly in the state; several legislative moves to assist them are proposed. The 1951 mast crop was the poorest on record; effects will be watched. Results of chukar releases are reported. 784 beavers were harvested; average pelt price was $11.90. A table shows number and value of pelts of each fur-bearer taken in 1951-52 as reported by state-licensed fur dealers. The value of such reports is indicated by the fact that only 40 beavers were so reported, although 784 were trapped.

INTERNATIONAL UNION FOR THE PROTECTION OF NATURE, THIRD GENERAL ASSEMBLY, Caracas, Venezuela, 3-9 September 1952. Technical Session.
The set of papers available to the reviewer contains 51 separately paged, mimeographed contributions by almost as many authors from many parts of the world. Papers reflect much thought on fundamental conservation, not merely species preservation. Two topics to which numerous papers are devoted are effects of hydroelectric developments on nature, and conservation in subarid lands. Five papers discuss the importance of fire in agriculture and conservation. Three papers take up the conservation of island faunas and floras. Papers on other subjects are: A Prerequisite of Nature Protection in the Tropics, by E. J. H. Corner; Progress of an Ethic, by Enrique Avila; Protecting Lands in Military Construction, by W. D. Ellison; Wildlife and the Land--A Reappraisal, by Albert M. Day; Two Limiting--and Lethal--Factors, by William Vogt; Rightofways of Power Lines--An Opportunity for Nature Protection, by Frank E. Egler.

WILDLIFE--REPORTS OF ORGANIZATIONS--Continued

Pennsylvania. BIENNIAL REPORT OF THE PENNSYLVANIA GAME COMMISSION, 1951-1952. Pennsylvania Game News 23(8): 67-128, illus. Nov. 1952.
Includes: data on hunting accidents, 1943-51; statement of kill of all classes of game, 1950-51; account of special deer seasons; report on conservation education; brief descriptions of research projects; discussion of management projects; tabulation of bear damage claims, by counties, 1950-52; brief accounts of rabies and predator control; statement of bounties paid; report on fur harvest, by species, both years; record of game propagation and transplanting; financial report; table of state game lands.

Vaughn, Ernest A. THIRTY-FIFTH ANNUAL REPORT OF THE DIRECTOR AND FOURTEENTH ANNUAL REPORT OF THE GAME AND INLAND FISH COMMISSION 1952. Game and Inland Fish Commission of Maryland. 1-93 p., illus. 1952.
Review of program and accomplishments.

MAMMALS--GENERAL

American Society of Mammalogists. TEN-YEAR INDEX, 1940-1949, TO JOURNAL OF MAMMALOGY. 1952. Cloth $3.75, paper $3.25. Order from Dr. K. R. Kelson, Museum of Natural History, University of Kansas, Lawrence. Make check payable to American Society of Mammalogists.
This index is exceptionally detailed and cross-indexed. A previous index volume covering the period 1919-1939 is still available, and may be ordered from Dr. Kelson at the price of $3.50 (cloth) or $2.50 (paper).

Edwards, R. York. HOW EFFICIENT ARE SNAP TRAPS IN TAKING SMALL MAMMALS? Journal of Mammalogy 33(4): 497-498. Nov. 1952.
Different trapping methods give different representations of the kinds of mammals present in an area. The catch of snap traps is quite different, both in species taken and their proportional representation, than that of sunken buckets with water in the bottom, or that of a freshly oiled road.

Godet, René. LES GLANDES ANNEXÉES A L'APPAREIL GÉNITAL CHEZ LES MAMMIFÈRES: HOMOLOGIES ET CLASSIFICATION. Mammalia 16(1): 24-36, illus. Mar. 1952. [From Journal of Mammalogy 33(4).]

MAMMALS--FAUNAS AND MANUALS

Anonymous. THE LAND MAMMALS OF RHODE ISLAND. Bulletin of the Audubon Society of Rhode Island 13(5): 6-8. Dec.-Jan. 1952-53.
Annotated list, with occasional notes on distribution, abundance, or economic status. Subspecies names are not used.

Blair, W. Frank. MAMMALS OF THE TAMAULIPAN BIOTIC PROVINCE IN TEXAS. Texas Journal of Science 4(2): 230-250, map. June 1952.
Describes 2 biotic districts of the province, discusses the biogeographical importance of the province, and provides an annotated list of 62 forms. The species accounts treat distribution in area, factors affecting distribution, relative abundance, population trends, and (for some forms) taxonomy. Didelphis virginiana and mesamericana are considered interbreeding forms rather than distinct species. Considerable information is given on population changes in the cotton rat.

Brown, Gordon H. ILLUSTRATED SKULL KEY TO THE RECENT LAND MAMMALS OF VIRGINIA. Virginia Cooperative Wildlife Research Unit (Blacksburg, Va.), Release no. 52-2. 1-75 p., illus. April 1952.
This key to skulls is detailed, well illustrated (114 figs.), is dichotomous, has glossary and index, and appears to be quite practical. Domestic and recently exterminated animals are included. Identifications are carried to species.

MAMMALS--FAUNAS AND MANUALS--Continued

Ellerman, J. R. and T. C. S. Morrison-Scott. CHECKLIST OF PALAEARCTIC AND INDIAN MAMMALS, 1758 to 1946. British Museum (Natural History). vi + 810 p. 1951. 65 s. [From review by L. Harrison Matthews, Nature 170 (4321).]

This "critical revision" treats 809 species inhabiting a large part of the world's surface. It links up with the already existing lists of the mammals of the Malayan and Ethiopian regions. "The authors give critical introductory paragraphs for each order and family, and indicate the diagnostic characters of each genus and species by reference to the appropriate works or by specially devised keys. The distribution of each species is approximately shown..." Subspecies are arranged in order of priority.

Mayer, William V. THE HAIR OF CALIFORNIA MAMMALS WITH KEYS TO DORSAL GUARD HAIRS OF CALIFORNIA MAMMALS. American Midland Naturalist 48(2): 480-512, illus. Sept. 1952.

This paper represents the most ambitious attempt yet made toward identification of hairs of all mammals of a large area. It begins with a discussion of the characters used and contains remarks on the characters of the hairs of orders and families, but the bulk of the paper is devoted to keys. These keys carry identification to all genera and most species. [All users of the key should take careful note that it is based on the true, primary guard hairs of the middle of the back of adult animals. Identification of hairs of wild animals is most commonly practiced in food habits work, and in this work one very frequently finds remains only of juveniles, or only specialized hairs from small parts of the body. It is often hard to find primary guard hairs and to know what part of the body they come from. The author wisely deemphasizes the diagnostic value of cuticular scales, but he places much weight on maximum length and width of hairs. It remains to be seen how useful these figures will prove; individual, seasonal, and geographic variations are likely to introduce great difficulties. Domestic animals, the bane of food habits workers because of their infinite hair variations, are not treated. This key may prove to be a useful guide, but constant comparison will still be necessary.]

McCarley, W. H. THE ECOLOGICAL RELATIONSHIPS OF THE MAMMALS OF BRYAN COUNTY, OKLAHOMA. Texas Journal of Science 4(1): 102-112, map. March 1952.

Annotated list of mammals, with discussions of ecological associations and faunal affinities of the county.

McKeever, Sturgis, W. Gene Frum, and Edward Berard. A SURVEY OF WEST VIRGINIA MAMMALS. Conservation Commission of West Virginia, Final Report PR project 22-R. v + 126 p., maps. Also appendix: iii + 53 p., maps. 1951. [Jan. 1952.] Mimeographed, paper bound.

This report is based on field work, 1948-51, and on considerable study of the literature. Information from trappers, hunters, and state agents is included. Soils, physiography, climate, land-use, forest cover, and plant successions of the state are briefly described. Each species of mammal is treated under the following headings: measurements, habits (chiefly habitat and distribution in state), breeding data, and records of occurrence. The recorded distribution of each species is mapped to county. History, status, and habits of economically important mammals are given special attention. Histories of recently extinct forms are included. There is a bibliography of about 62 titles. The report is not intended to serve as a handbook or manual, but it should be a useful source of information on history, distribution, abundance, and measurements of West Virginia mammals. The appendix, "Basic Study of the Raccoon," by E. V. Berard, is reviewed on p. 22 of this issue of WR.

Sherman, H. B. A LIST AND BIBLIOGRAPHY OF THE MAMMALS OF FLORIDA, LIVING AND EXTINCT. Quarterly Journal of the Florida Academy of Sciences 15(2): 86-126. June 1952.

The list gives scientific name, common name (if any), and geological period. Marine mammals are included. The bibliography lists about 520 titles, some as late as 1951.

MAMMALS--PARASITES AND DISEASES

Ecke, D. H., C. W. Johnson, V. I. Miles, M. J. Wilcomb, Jr., and J. V. Irons. PLAGUE IN COLORADO AND TEXAS. U. S. Public Health Service, Public Health Monograph no. 6. 54 p. 1952. 30¢ from Superintendent of Documents. [From long summary in Public Health Reports 67(11).]

Consists of 2 parts. Part 1, Plague in Colorado, reports studies in 13 counties. "The five major habitats...are described...Thirteen species of Colorado mammals are listed, with information on their range, distribution, hibernation habits, fleas found on each species, and [plague] importance of each species of flea...Forty-one species of fleas are listed, with information on their host preference [and monthly occurence] and medical importance... Transmission of plague by nonrodent species--avian predators and scavengers, two mammalian predators, the badger and the coyote--and man's influence...are discussed...The results of association of domestic rats with field rodents are discussed." A survey of the rural rat populations around Denver is reported. Part 2 is Rodent Plague in the Texas South Plains, 1947-49, with Ecological Considerations. "...the methods and procedures used by the plague-typhus control unit...[and the]...habitat types, and small-mammal species in the area are...discussed." Hosts and seasonal numbers of fleas, and occurrence of plague, are noted. "Results are reported of [an ecological study]...of an area in which most of the habitat types and animal species common to the South Plains were well represented, together with a map...[of] prairie dog colonies in the area, and the relation of such areas to plague epizootics among prairie dogs."

MAMMALS--SHREWS, MOLES, BATS

Blair, W. Frank. BATS OF THE EDWARDS PLATEAU IN CENTRAL TEXAS. Texas Journal of Science 4(1): 95-98. March 1952.

Annotated list; biogeographic relations.

Crowcroft, Peter. REFECTION IN THE COMMON SHREW. Nature 170(4328): 627. Oct. 11, 1952.

Redigestion appears to be normal in Sorex araneus of Europe. Material is transferred directly from the tubularly protruded rectum to the mouth. The material is not ordinary feces, but "a milky fluid containing numerous fat globules and small fragments of undigested food." The process and its possible significance are discussed.

Henning, Willard L. STUDIES IN CONTROL OF THE PRAIRIE MOLE SCALOPUS AQUATICUS MACHRINUS (RAFINESQUE). Journal of Wildlife Management 16(4): 419-424. Oct. 1952.

Many new insecticides, fumigants, commercial baits, and other poisons were tested. Highly effective were thallium sulphate on raw peanuts, and decapitated earthworms treated with either strychnine or 1080. These methods are recommended for thorough field testing.

Mohr, Charles E. A SURVEY OF BAT BANDING IN NORTH AMERICA, 1932-1951. The American Caver, Bulletin 14. 3-13 p., illus. 1952.

This useful paper reviews the history of bat banding, tells how and why it is done, presents a table showing the known banders and the extent of their banding, and discusses plans for future cooperative studies. Non-banders will be interested in the section "Results of Banding," where compiled data are brought to bear on the following questions: Do the same individuals return annually to the caves in which they were banded? Do bats have a homing instinct? Can the movements of individual bats be traced? What is the maximum life span of bats of various species? To what extent is the sex ratio disproportionate? Can the growth of bats be charted? What can be determined about life histories? Bibliography of 39 titles. The author [Audubon Nature Center, Greenwich, Conn.] also has for distribution a mimeographed list giving names and addresses of American bat banders.

MAMMALS--RABBITS AND PIKAS

Bruna, Joe F. KENTUCKY RABBIT INVESTIGATIONS. Kentucky Department of Fish and Wildlife Resources, Federal Aid Project W-26-R. 1-83 p., illus. July 1952.

Life history study of cottontail, based on detailed work on a study area and on state-wide kill data. The paper should be studied by anyone concerned with cottontail biology. It contains useful information on reproduction, nesting, breeding seasons, age and growth, age ratios, seasonal ranges, diseases and parasites, cover utilization, census techniques, survey of opinions as to abundance each year since 1930, estimated state-wide kill, longevity, soils and weights, and management. Summaries are provided for sections as well as for the whole paper. Management recommended is preservation or creation of well distributed cover. Where cover is scarce, farmers should be sold on multiflora rose for its fencing value. Hunting has little effect on population fluctuations, and regulations should be liberalized after pre-hunting season survey techniques are perfected.

Crawford, Bill T. THE OZARK RABBIT DILEMMA. Missouri Conservationist 13(12): 4-5, 12, illus. Dec. 1952.

Cottontails were common when the Ozark hills were being settled, but soil deterioration, overgrazing, fire, and reversion to forest have ruined the region for rabbits. The best use of the rough uplands is timber production, with agriculture restricted to valleys. Except for a few places around farms, the region is not likely to become good rabbit country again.

Dell, Joseph. SNOWSHOE RABBITS. NEW HOMES FOR DISPLACED ANIMALS. New York State Conservationist 7(3): 23, illus. Dec.-Jan. 1952-53.

Snowshoe hares disappeared from many parts of New York when land clearing was at its peak, before the turn of the century. The poorer hill-top farm lands have been abandoned at an average rate of 100,000 acres per year. They are reverting to woods and brush, and the state is reintroducing hares. Game farm stock was hard to rear and survived poorly in the wild, so only wild-trapped hares are now used. Restoration has been successful in at least 2 areas, both of which are extensive uplands containing multi-aged blocks of spruces and pines interwoven with open lanes. Hares from one release multiplied and spread over an area of 25 square miles in 3 years.

Jones, John C. CONTROLLING COTTONTAILS. Pest Control 20(10): 32, 34, 68, illus. Oct. 1952.

Reviews habits briefly and recommends several repellents, wire-mesh guards for trees, fencing out, and live-trapping. Applications and limitations of these methods are discussed. Encouragement of predators and hunting are suggested for areas where they are practical.

Latham, Roger M. SO YOU WANT MORE RABBITS? Pennsylvania Game News 23(9): 9-13, illus. Dec. 1952.

Why imported rabbits won't help in Pennsylvania. Figures show that even if the imports succeeded they would be but a drop in the bucket. A graph of hunting season kill and number of rabbits stocked (1921-50) demonstrates that stocking has not affected trend of kill. Natural reproduction fills the available habitat. Breeders cannot be overshot: 60 to 80% survive the hunting season even where intensively hunted. Various kinds of rabbit farms have failed. Local transplanting is uneconomical. The answer is provision of food and cover, and often cover alone is the need. The Game Commission cannot do the job alone but it can assist hunting clubs and landowners in planting food and cover plants and in filling gullies with brush and rock piles. One eroded gully, properly handled, can furnish a season's limit of rabbits.

Neal, Richard K. COTTONTAIL POPULATION, MOVEMENT AND MORTALITY STUDY IN CENTRAL PENNSYLVANIA. M. S. thesis, Pennsylvania State College, June 1951.

MAMMALS--RABBITS AND PIKAS--Continued

Stephens, Marie N. SEASONAL OBSERVATIONS ON THE WILD RABBIT (ORYCTOLAGUS CUNICULUS CUNICULUS L.) IN WEST WALES. Proceedings of the Zoological Society of London 122(2): 417-434, graphs. Aug. 1952.
Based on sample of 7,085 rabbits collected between September 1948 and January 1950. Analyses are given of seasonal distribution of weights, seasonal occurrence of reproduction, prenatal sex ratio and litter size, postnatal sex ratios in various samples, coprophagy, parasites, and diseases. Some breeding occurred every month, but litters were larger in spring than in winter. Prenatal sex ratio was 100 males to 106 females. Sex ratios in right and left uterine horns were quite different: 100 males to 136 females in left horn, 100 to 81 in right.

MAMMALS--RODENTS--MISCELLANEOUS

Doran, David J. OBSERVATIONS ON THE YOUNG OF THE MERRIAM KANGAROO RAT. Journal of Mammalogy 33(4): 494-495. Nov. 1952.

Dykstra, Walter W. LATEST ON THE NEW SAFER ANTICOAGULANT RODENTICIDES. Pest Control 21(1): 18, 20. Jan. 1953.
Tells of experimental work with Warfarin, Tomorin, and Pivalyl. The latter 2 are not yet ready for general use but show promise.

Fitzwater, William D. FIELD MICE: FURROWERS AND BURROWERS. Pest Control 20(10): 30, 74, illus. Oct. 1952.
Brief review of habits of meadow and pine mice and suggestions for control. Trees can be protected for meadow mice by hardware cloth guards. Both mice can be snap-trapped or poisoned. Zinc phosphide is considered the best poison. Directions are given for treating apple cubes or rolled oats with it, and for placing the baits in runways of Microtus and burrows of Pitymys. Covered bait stations may also be used.

Glass, Bryan Pettigrew. ECOLOGICAL FACTORS AFFECTING DISTRIBUTION AND SPECIATION OF POCKET GOPHERS IN OKLAHOMA. Ph. D. thesis, Oklahoma A. & M. College, May 1952.

Hacker, H. P., and H. S. Pearson. DISTRIBUTION OF THE LONG-TAILED FIELD MOUSE, APODEMUS SYLVATICUS, ON SOUTH HAVEN PENINSULA, DORSET, IN 1937, WITH SOME OBSERVATIONS ON ITS WANDERING AND HOMING POWERS. Jour. Linnean Soc. London 42(283): 1-17, illus. May 11, 1951. [From Journal of Mammalogy 33(4).]

Hall, E. Raymond and E. Lendell Cockrum. A SYNOPSIS OF THE NORTH AMERICAN MICROTINE RODENTS. University of Kansas Publications, Museum of Natural History, 5(27): 373-498, illus. Jan. 1953.
This extremely useful synopsis has keys to all genera, subgenera, and species, and maps showing the ranges of all species and subspecies. Drawings of whole animals and skulls assist in identification. Diagnoses are provided for genera, subgenera, and species. For each subspecies is given synonymy and a list of distribution records that outline the range. The synonymy includes reference to the paper in which the name first appeared in the present combination--a valuable bit of information omitted by too many authors. Pitymys is treated as a subgenus of Microtus, Lemmiscus as a subgenus of Lagurus. All workers concerned with identification of mammals should be grateful to Hall and his associates for this series of practical, up-to-date summaries. The previous number of the series treated the Lagomorpha (U. Kans. Publs., Mus. Nat. Hist. 5(10): 119-202. Dec. 1951.).

Howard, Walter E. and Melvin E. Smith. RATE OF EXTRUSIVE GROWTH OF INCISORS OF POCKET GOPHERS. Journal of Mammalogy 33(4): 485-487. Nov. 1952.
Includes data on incisor growth in several other rodents and domestic rabbit.

MAMMALS--RODENTS--MISCELLANEOUS--Continued

Jackson, William B. POPULATIONS OF THE WOOD MOUSE (PEROMYSCUS LEUCOPUS) SUBJECTED TO THE APPLICATIONS OF DDT AND PARATHION. Ecological Monographs 22(4): 259-281, graphs. Oct. 1952.

An important contribution to knowledge of biology of this much studied rodent. One section is devoted to analyses of various criteria of maturity, and the weights at which 50% of the mice attain maturity as judged by each criterion. Another section is devoted to study of reproduction and seasonal reproductive pattern as determined by autopsy. Among other topics discussed are population composition, differential movements of sexes, habitat preference, lack of effect of weather on trap success, and food habits. The work was done in southern New Jersey where vegetable fields are bordered by woods or hedgerows. Crops were heavily treated with insecticide, but little poison entered woods. Wood mice ate few poisoned insects (although they ate many insects). Lines of snap-traps run at 150 places, and study of reproduction, indicated no damage to the mice.

Lavender, Denis P. FIELD AND LABORATORY TESTS OF SOME FOREST RODENT CONTROL PREPARATIONS. Oregon State Board of Forestry, Research Notes no. 6. 1-16 p., illus. May 1952.

Reports experiments on Peromyscus control with 1080, thallous sulfate, tetramethylene disulpho tetramine, Promurit, Warfarin, and various repellents. The repellents were not satisfactory. Leaching tests were made on certain of the poison baits, particularly those treated in various ways with 1080. Tetramine had repellent as well as toxic value, and Warfarin was lethal in single doses. Best control was achieved with a combination of soaked 1080 baits and thallous sulfate baits.

Lindeborg, Robert G. WATER REQUIREMENTS OF CERTAIN RODENTS FROM XERIC AND MESIC HABITATS. University of Michigan, Contributions from the Laboratory of Vertebrate Biology no. 58. 1-32 p., graphs. June 1952.

Experiments with various forms of Perognathus, Peromyscus, and Microtus on amount of water voluntarily consumed, and on effect of reduced water supply on weight and survival. Results revealed good correlation between inherent water needs and habitat, with forms from moist habitats requiring much water to live, and some forms from dry habitats being able to exist without free water. Such differences existed between races as well as between species and genera. Differences are "also reflected in the adjustment of breeding season to coincide with periods when sufficient water is available to bring the young through to weaning age."

Miller, Milton A. SIZE CHARACTERISTICS OF THE SACRAMENTO VALLEY POCKET GOPHER (THOMOMYS BOTTAE NAVUS MERRIAM). Journal of Mammalogy 33(4): 442-456, graphs. Nov. 1952.

Although primarily a statistical study of weights and measurements of 2300 specimens, this paper contains information on sexual dimorphism, correlation of size characteristics with reproductive groups, relation of environment to size, allometric growth, and comparisons with other races.

Pearson, Paul G. OBSERVATIONS CONCERNING THE LIFE HISTORY AND ECOLOGY OF THE WOODRAT, NEOTOMA FLORIDANA FLORIDANA (ORD). Journal of Mammalogy 33(4): 459-463, graph. Nov. 1952.

Notes on nests, foods, reproduction, growth, movements and behavior.

Sands, Daniel E. A STUDY OF THE ALLEGHENY WOOD RAT IN CENTRAL PENNSYLVANIA. M. S. thesis, Pennsylvania State College, 1951.

Stein, Georg H. W. ÜBER FORTPFLANZUNGSZYKLUS, WURFGRÖSSE UND LEBENSDAUER BEI EINIGEN KLEINEN NAGETIEREN. Zeitschrift Schädlingsbekämpfung 42(5-6). 10 p. May 1950. [From Journal of Mammalogy 33(4).]

MAMMALS--RODENTS--MISCELLANEOUS--Continued

Stein, Georg H. W. ÜBER MASSENVERMEHRUNG UND MASSENZUSAMMENBRUCH BEI DER FELDMAUS. POPULATIONANALYTISCHE UNTERSUCHUNGEN AN DEUTSCHEN KLEINSÄUGETIEREN. III. MICROTUS ARVALIS. Zool. Jahrbücher, Jena, Abt. Syst. 81(1-2): 1-26. Mar. 31, 1952. [From Journal of Mammalogy 33(4).]

Stone, J. Herbert. PORCUPINE DAMAGE TO TREES SERIOUS IN NORTHWEST. Journal of Forestry 50(11): 891. Nov. 1952.
Brief note stating that 1 porcupine can and often does kill as many as 100 trees a winter, and that the total damage is becoming serious. Marked increase of porcupines is attributed to heavy trapping of its chief enemy, the fisher. Hunters are urged to shoot porcupines, which are not protected by law in the region.

MAMMALS--HOUSE RATS AND MICE

Davis, David E. and Wayne L. Jensen. MORTALITY IN AN INDUCED EPIDEMIC. Transactions of the 17th North American Wildlife Conference. p. 151-160, illus. 1952.
Results of introducing salmonellosis into a population of Rattus norvegicus on a farm. Mortality occurred but the population doubled during the study. Spread of the disease was slow except during a period when habitat changes caused considerable movement of the rats.

Gillogly, Lorin R. STUDIES OF WARFARIN RAT POISON. State of California Department of Agriculture, Bulletin, 41(3): 139-143, illus. July-Sept. 1952.
Author's summary: "Alfalfa leaf meal (a source of vitamin K) tends to antidote warfarin, but the effect is probably not significant in ordinary baits. A concentration of warfarin as low as 5 ppm. in a diet nearly free of vitamin K kills rats at the normal rate. Under the same circumstances, rats tolerate 2 ppm. for at least one month. This difference provides a means of bioassaying warfarin baits."

Morlan, H. B., B. C. Utterback, J. E. Dent, M. J. Wilcomb, Jr., M. E. Griffith, and L. L. Ellis. DOMESTIC RATS, RAT ECTOPARASITES, AND TYPHUS CONTROL. U. S. Public Health Service, Public Health Monograph no. 5. 38 p. 1952. 25¢ from Superintendent of Documents. [From long summary in Public Health Reports 67(11).]
Consists of 3 parts. Part 1, Domestic Rats in Relation to Typhus Control, reports work in Georgia on "the composition of rat samples and the prevalence of typhus antibodies in rats by species, sex, and age, together with observations on rat behavior and reproduction. It includes information for students of rat ecology..." Part 2, Ectoparasites of Domestic Rats in Relation to Typhus Control, deals with the "extensive ectoparasite data collected during a study of murine typhus in southwestern Georgia..." Effect of DDT on the parasites is evaluated. Part 3, Commensal Rat Ectoparasite Collections in Oklahoma, treats the "ectoparasite and typhus records from commensal rat collections in 33 Oklahoma counties from November 1949 through June 1951..." Rats considered in these studies are R. rattus and R. novegicus, chiefly the latter.

Storer, Tracy I. CONTROLLING RATS AND MICE. California Agricultural Experiment Station, Extension Service, Circular 410. 35 p., illus. 1952. [From Monthly Checklist of State Publications 43(10).]

Tanaka, Ryo and Fumio Kawashima. MOVEMENT AND POPULATION OF THE BROWN RAT IN KOCHI CITY. Annot. Zool. Japonenses 24(4): 225-233, illus. Dec. 1951. [From Journal of Mammalogy 33(4).]

MAMMALS--SCIURIDS

Anonymous. SQUIRRELS TAKE 75 PERCENT OF THE 1951 PONDEROSA PINE SEED CROP. U. S. Forest Service, Northern Rocky Mountain Forest and Range Experiment Station (Missoula, Mont.), Research Hi-Lites, October 17, 1952, p. 2.

On Kootenai National Forest. "...in the process of removing the mature cones the squirrels inadvertently destroyed some of the conelets which would have matured the next season if they had been left on the trees. On the samples examined the squirrels usually removed the mature cones by cutting the cone-bearing shoots, thus destroying any immature cones which those shoots had, and thereby reducing the potential for the next crop."

Beltz, Alex and Ernest S. Booth. NOTES ON THE BURROWING AND FOOD HABITS OF THE OLYMPIC MARMOT. Journal of Mammalogy 33(4): 495-496. Nov. 1952.

Liscinsky, Stephen A. THE LIFE HISTORY AND HABITAT OF THE NORTHERN GRAY SQUIRREL IN RELATION TO SOME PLANT COMMUNITIES IN CENTRE COUNTY, PENNSYLVANIA. M. S. Thesis, Pennsylvania State College, June 1951.

Longanecker, D. S. and A. L. Burroughs. SYLVATIC PLAGUE STUDIES, IX. STUDIES OF THE MICROCLIMATE OF THE CALIFORNIA GROUND SQUIRREL BURROW AND ITS RELATION TO SEASONAL CHANGES IN THE FLEA POPULATION. Ecology 33(4): 488-499, illus. Oct. 1952.

Parker, Richard Louis. ECOLOGY AND ECONOMICS OF THE WESTERN FOX SQUIRREL, SCIURUS NIGER RUFIVENTER (GEOFFREY) IN PAYNE COUNTY, OKLAHOMA. M. S. thesis, Oklahoma A. & M. College, May 1952.

MAMMALS--BEAVER

Anonymous. BEAVER TRAPPING IN NORTH DAKOTA. North Dakota Game and Fish Department, PR Project 7R. 1-14 p., illus. Oct. 1952.

Appears to be a very useful, practical booklet. A number of trapping methods are described and well illustrated. The paper also discusses legal status of beaver in the state, how to handle pelts, and recognition of beaver sign.

Bailey, R. Wayne. STATE-WIDE RESURVEY OF WEST VIRGINIA'S BEAVER POPULATION. Conservation Commission of West Virginia, Final Report PR Project W-30-R. 1-80 p., map. Oct. 1952.

Report of survey made in winter of 1951-52. The 557 colonies and 314 strays found were thought to represent a population of 3,119 beavers (estimated at 5 per colony), an increase of 45% since 1947. All "potential" range found in the 1947 survey has been occupied. The estimated annual yield per acre from beaver is $4.00, while that from timber is $3.84. Beaver-trout relationships are discussed with recommendations that careful study be made before a stream is officially designated as a trout stream or a beaver stream. Apparently some streams are misclassified. Beaver work seems to favor larger populations of other wildlife, including mink, muskrat, and ducks. The author attempts to evaluate the case for and against beaver in the state from all points of view.--L. M. Llewellyn.

Denny, Richard N. A PROGRAM FOR ADMINISTRATION AND MANAGEMENT OF THE BEAVER IN COLORADO. M. S. thesis, Colorado A. & M. College, 1951.

Halsala, John B. THE LIFE HISTORY AND GENERAL ECOLOGY OF THE BEAVER (CASTOR CANADENSIS KUHL) IN INTERIOR ALASKA. M. S. thesis, University of Alaska. 1-181 p. 1952.

Jones, Glenn E. and Juanita Mahaffey. BEAVER SURVEY. Oklahoma Game and Fish News 8(11): 8-10, illus. Nov. 1952.

Distribution and abundance in Oklahoma. The total known population is 485, but colonies are well scattered over the state. Beavers are legally protected but considerable promiscuous killing is a problem. Beavers create better muskrat habitat and sometimes provide stock watering ponds.

MAMMALS--BEAVER--Continued

Twichell, Reed. NATIONAL STATUS OF BEAVER AND BEAVER MANAGEMENT. Transactions of the 17th North American Wildlife Conference. p.476-482. 1952.
"This paper describes the history of beaver management in Missouri and summarizes the various management methods of other states and provinces." The problem in many areas today is to get a sufficiently heavy harvest to prevent waste, damage, and habitat exhaustion. Some figures are given on numbers of beavers now trapped annually. The average for 26 U. S. states was 4,535 in 1951. In Canada, more than 188,000 were pelted. Recent increases have been great.

MAMMALS--MUSKRAT AND NUTRIA

Bell, Thomas A. THE MUSKRAT IN WYOMING: PROPER MANAGEMENT OF A VALUABLE FUR RESOURCE DEMANDS LEGISLATIVE ACTION. Wyoming Wild Life 16(12): 4-11, illus. Dec. 1952.
The muskrat has no protection of any kind in Wyoming and the take plunged from 100,000 in 1940 to no more than 20,000 in 1949. Regulations of neighboring states are reviewed and similar measures are proposed for Wyoming. Beaver, raccoon, and most of the mustelids should be classified legally as fur-bearers. Fisher, otter, and wolverine are so scarce in the state (if present at all) that they should be ranked as protected animals. Some regulation of fur dealers, as practiced in other states, is recommended.

Glass, Bryan P. FACTORS AFFECTING THE SURVIVAL OF THE PLAINS MUSKRAT, ONDATRA ZIBETHICA CINNAMOMINA, IN OKLAHOMA. Journal of Wildlife Management 16(4): 484-491. Oct. 1952.
Biology of the muskrat in ponds: behavior, foods, numbers, burrows, damage to ponds. No serious damage is done to ponds that are properly constructed. Foods found in 22 stomachs and 3 scats of minks are listed. Predation on muskrats was not found.

Hargrave, Charles. AGE AND SEX RATIOS OF MUSKRATS HARVESTED DURING 1951 SEASON. North Dakota Outdoors 14(10): 17. April 1952.
Based on 3452 pelts. North Dakota. Population was larger, with more young, than in 1950. Houses were also more numerous.

Jellison, William L., Glen M. Kohls and Cornelius B. Philip. TULAREMIA--MUSKRATS AS A SOURCE OF HUMAN INFECTION IN UTAH. Rocky Mountain Med. Jour. 48(8): 594-597. Aug. 1951. [From Journal of Mammalogy 33(4).]

Schmidt, Vic. MUSKRAT MANAGEMENT AND WATER LEVEL CONTROL. New Jersey Outdoors 3(6): 18-21, illus. Dec. 1952.
Income from muskrat pelts in New Jersey may range from $5 to $18 per acre of marsh. Carcasses have been selling for about 20¢ apiece. Production is highest on marshes where dikes and other structures permit control of water levels. On the managed Tuckahoe area, marshes are drained down to marsh level after trapping (March 15) and left low until September, when they are gradually deepened until trapping begins January 1. The drawdown increases production of muskrat foods. Trapping quotas are set from house counts. Populations are estimated on the basis of 5 rats per house. The catch at Tuckahoe is just over 6 per acre. It is believed that 60-70% of the population may be trapped without injuring populations, and that under local conditions it is not possible to catch more than 70%. Each adult female produces about 13 young per year, of which only 4 survive until trapping season.

MAMMALS--FURBEARERS--GENERAL

Wood, John Eugene. THE ECOLOGY OF FURBEARERS IN THE UPLAND POST OAK REGION OF EASTERN TEXAS. Ph. D. thesis, Texas A. and M. College. 1952.

MAMMALS--FURBEARERS--GENERAL--Continued

Wood, John Eugene. THE EFFECTS OF AGRICULTURE (RANCHING AND FARMING) ON THE HABITAT AND FOOD SUPPLY OF FURBEARERS IN THE POST OAK REGION OF TEXAS. Transactions of the 17th North American Wildlife Conference. p. 427-437, illus. 1952.

Habitat preferences (as shown by steel trapping) and food habits of the furbearers are discussed, but the most interesting part of the paper concerns the effect of grazing. The region has sandy soils and supports a blend of prairie and forest, all of which, except the 25% of farmland, is grazed. The type of live stock is not stated. The author maintains that grazing sets back the grasses and thus encourages invasion of fruit-producing woody plants that support increased furbearer populations. [Presumably this conclusion would not apply equally well to the large areas in central Texas where goats and/or deer keep most woody plants browsed down and high-lined.]

MAMMALS--BEARS

Drahos, Nick. NOTES ON BEARS. New York State Conservationist 7(2): 14-18, illus. Oct.-Nov. 1952.

This entertaining article contains a great deal of solid information on the natural history of black bears, and a lot of brief anecdotes about them. It has an unusual amount of information on weights. Bears are legally protected game in New York, and the state does not pay bear damages. A map shows distribution and areas of abundance in New York.

Gilbert, Douglas L. ECONOMICS AND RELATED BIOLOGY OF THE BLACK BEAR IN COLORADO. M. S. thesis, Colorado A. & M. College, 1951.

Goodwin, George G. MONARCH OF THE ARCTIC WASTES. Animal Kingdom 55(6): 182-187, illus. Nov.-Dec. 1952.

Popular but factual and informative account of biology of polar bear.

Lindau, Bill. BARE FACTS ABOUT BEARS. Wildlife in North Carolina 16(12): 8-9, 20, illus. Dec. 1952.

Stock-killing bears from the Great Smoky Mountains National Park have created grave problems in North Carolina. This article outlines the attempted solutions. The state has appointed an agent to ride part of the park boundary. He will shoot stock-killers or organize hunts for them. If bears flee into the park, the matter is turned over to park rangers. Stockmen are given special permits to trap killers. Live traps are also set; live-trapped bears are marked and released in remote parts of the park.

Murie, Adolph. GRIZZLY MOTHERS IN THE ALASKA RANGE. Living Wilderness 17(42): 15-21, illus. Autumn 1952.

Narrative account of conflict (apparently territorial) between 2 females and the resultant killing of 2 cubs. The incident is interesting as an example of how inherent population controls may work.

Oleson, T. J. POLAR BEARS IN THE MIDDLE AGES. Canadian Hist. Rev. 31(1): 47-55. 1950. [From Journal of Mammalogy 33(4).]

MAMMALS--RACCOON AND RINGTAIL

Berard, Edward V. BASIC STUDY OF THE RACCOON. [This paper is a separately paged appendix (iii + 53 p., maps, graph.) in "A Survey of West Virginia Mammals," by McKeever, Frum, and Berard, which is fully cited and reviewed on p. 14 of this issue of WR.] 1951. [Jan. 1952.]

Survey of status of raccoon in West Virginia. The author discusses the relative abundance of raccoons on several publicly owned areas and tells how the determinations were made, but the bulk of the paper is devoted to history in state, population trends, trapping, hunting, and the extent and value of releases. Valuable data are given on hunting practices, costs of stocking, and sources of animals stocked. Several races have been imported, including

MAMMALS--RACCOON AND RINGTAIL--Continued

some from Florida. It is shown clearly that the take of raccoons has increased sharply in recent years despite falling fur prices. [Many workers have casually assumed that the widespread increase was owing to the take falling with the fur price, but this view is not acceptable.] The harvest is so much greater than the number stocked that stocking can have but little value. The many coon clubs in the state might better spend their money buying den trees and putting nest boxes where they are needed. Small dams in some areas might improve raccoon habitat. The present 3-month hunting season comes at the proper time (especially for primeness), but daily and seasonal bag limits could be removed.

Whitney, Leon F. and Acil B. Underwood. THE RACCOON. Practical Science Publishing Co., Orange, Conn. 177 p., illus. 1952. $3.75.

Both sportsman and technician will find much of value in this book but neither will be entirely satisfied. Laymen will find some sections too academic. Wildlife managers may feel that too many topics are treated too briefly, and may wish the authors had taken different attitudes on some points. Certainly the authors (one a veterinarian, one a raccoon rancher, both dyed-in-the-wool coon hunters) have combined their own information with that gleaned from a vast amount of literature to produce a work that leaves few aspects of raccoon biology unmentioned. Original material presented is interesting, though usually narrative rather than quantitative, and is largely of the type wildlife technicians find it hard to gather. On the whole, the book is an odd mixture of compilation and observation. Perhaps the approach least stressed is that of ecology and wildlife management. Subjects emphasized are behavior, psychology, reproduction, color phases and their inheritance, foods, parasites, and rearing in captivity. Other chapters treat physical characteristics, hibernation, travels, legal protection, commercial uses, and the tame raccoon. Hundreds of references are cited, either at the ends of chapters or at the end of the book.--L. M. Llewellyn.

Wilson, Ken. RACCOON HUNTING AND THE TRAPPER. Wildlife in North Carolina 15(11): 8-9, 22, illus. Nov. 1952.

Raccoons have become scarce in western North Carolina and 2,397 live-trapped 'coons have been released there. The cost is $5 to $6 per 'coon, half of which is paid by the State Commission. It is now illegal to trap raccoons in the state west of U. S. Highway 1, but many are trapped there in the course of trapping for other animals. The bulk of this article is devoted to telling (with sketches) how to avoid accidental trapping of raccoons.

MAMMALS--MUSTELIDS

Enders, Robert K. REPRODUCTION IN THE MINK (MUSTELA VISON). Proceedings of the American Philosophical Society 96(6): 691-755, illus. Dec. 1952.

A comprehensive technical paper based on several years of cooperative work done with federal assistance. Practically all aspects of reproduction and factors affecting reproduction are analyzed, most of them in detail. A few of the topics treated are: germinal epithelium, oogenesis, follicular cycle, relation of stimulation to ovulation, compensatory hypertrophy, intra- and transuterine migration, implantation, vaginal cycle, anatomy of coitus, sperm survival, artificial insemination, breeding behavior, modification of breeding cycle, factors affecting duration of pregnancy, factors affecting size of litter, sex ratios. Unsolved problems of interest to breeders are pointed out. The literature is well utilized, of course, and 105 references are cited.

Newby, Fletcher E. MARTEN IN MONTANA. Montana Wildlife 2(3): 14-15, illus.

Brief account of marten study project and of the livetrapping being done in connection with it. There are two races in the state, the British Columbia marten, whose pelt was worth about $22 in 1951, and the Pacific marten, whose pelt was worth about $18.25. Roughly 35% of the catch is of the better race, which is found chiefly in Lincoln and Flathead counties. Montana has considerable

MAMMALS--MUSTELIDS--Continued

suitable marten habitat having few or no marten. These areas were trapped out, or are old burns now becoming good habitat. It is planned to restock them with animals of the British Columbia race.

Quick, Horace F. SOME CHARACTERISTICS OF WOLVERINE FUR. Journal of Mammalogy 33(4): 492-493. Nov. 1952.
There is a common belief that wolverine fur is used as parka trim because frost will not form on it. Actually, moisture congeals on it as it does on other furs. The difference is that frost is easily brushed off of wolverine hair, and the hair therefore can be kept dry. Eskimos pay as much as $70 for wolverine pelts, largely because of their beauty and rarity, partly because of their frost-shedding quality.

Thomas, Earl M. THE FUR-BEARING MAMMALS OF WYOMING. Wyoming Wild Life 16(11): 30-34, illus. Nov. 1952.
This 9th installment, on the otter, reviews habits, foods, breeding, enemies, and economic values. The otter is said to feed almost entirely on fish in Wyoming. Recently it has been given complete statutory protection in the state and is expected to persist in small numbers.

Thomas, Earl M. THE FUR-BEARING MAMMALS OF WYOMING. Wyoming Wild Life 16(12): 32-38, illus. Dec. 1952.
Tenth installment. Review of the habits and biology of the striped skunk. Many skunks perish in predator or rodent control campaigns directed at other animals. There are numerous records of them being killed from eating poisoned rodents.

Vos, Antoon de. THE ECOLOGY AND MANAGEMENT OF FISHER AND MARTEN IN ONTARIO. Ontario Department of Lands and Forests (Toronto), Technical Bulletin. 1-90 p., illus. 1952.
Based on 4 years of study and a doctoral thesis, this is the major paper on the fisher. It also contains considerable information on the marten. Data were obtained from all available sources. Subjects include: variations; circuital foraging movements and factors affecting them; habits and behavior; foods; parasites; enemies and competitors; past and present status in Ontario; habitat requirements; sex ratios; sex and age characters; management. Also, a large section of the bulletin is devoted to a special study of the ecology and abundance of all sorts of mammals and birds in 3 large parts of the Chapleau Forest District. Fisher and marten require fairly mature forest. Their depletion is attributed to fire, lumbering, and over-harvesting. They usually respond well to protection (closed seasons, refuges) where habitat is good. Restocking is successful and economical, at least for marten. Lumbering patterns now being adopted may help. A restricted harvest will always be necessary; the author estimates that the allowable harvest for sustained yield in good Ontario habitat would be about 1 marten per 2 square miles and 1 fisher per 6 square miles.

MAMMALS--DOGS, WOLVES, FOXES

Arnold, David A. THE RELATIONSHIP BETWEEN RINGNECKED PHEASANT AND RED FOX POPULATION TRENDS. Papers of the Michigan Academy of Science, Arts and Letters 37: 121-127, map and graphs. 1951. [1952.]
Fox and pheasant kill figures (1938-49) were analyzed for 5 groups of counties in the main pheasant range of Michigan. Population trends for both species are shown by graphs. "The use of the best available data, analyzed by proved statistical methods, has failed to show that the irruption of the fox population in Michigan in 1945 was related to the low numbers of pheasants experienced in 1947...The lack of a definite relationship between fox and pheasant numbers shows...that foxes have no major influence on pheasant populations and in all likelihood have little or no effect on them." Habitat preferences of the 2 species differ. "In general, the pheasant has recently reached its greatest abundance on the heavier, more fertile soils; on the other hand, optimum fox habitat is found in submarginal farm lands where abandoned fields and brush are common and the soil is light and well drained."

MAMMALS--DOGS, WOLVES, FOXES--Continued

Hildebrand, Milton. AN ANALYSIS OF BODY PROPORTIONS IN THE CANIDAE. Amer. Jour. Anat. 90(2): 217-256, illus. Mar. 1952. [From Journal of Mammalogy 33(4).]

Hildebrand, Milton. THE INTEGUMENT IN CANIDAE. Journal of Mammalogy 33(4): 419-428, illus. Nov. 1952.
Includes information on pelage, vibrissae and their functions, direct relation between number of mammae and litter size.

Kitselman, C. H. and A. R. Borgmann. A COMPARATIVE STUDY OF THE REACTION OF DOGS AS A SUSCEPTIBLE SPECIES TO SUBLETHAL DOSES OF ALDRIN AND DIELDRIN. Journal of the American Veterinary Medical Association 121(908): 383-385, graphs. Nov. 1952.

Latham, Roger M. THE FOX AS A FACTOR IN THE CONTROL OF WEASEL POPULATIONS. Journal of Wildlife Management 16(4): 516-517, illus. Oct. 1952.
Foxes are known to kill many weasels, although they may not eat them, and Pennsylvania bounty records (1930-51) indicate that weasel populations vary inversely with fox populations. The author concludes that foxes reduce and control weasel populations by predation upon them.

N. Y. Conservation Department. A STUDY OF FOX CONTROL AS A MEANS OF INCREASING PHEASANT ABUNDANCE. New York Conservation Department, Research Series no. 3. 1-22 p., maps. 1951.
In one semi-isolated area of over 70,000 acres, about 80% of the foxes were trapped out from August 1947 to March 1949. A check area of similar size was not officially trapped; the level of its fox population was roughly 5 times as high. Both areas had wild pheasants as well as many released game-farm pheasants. Pheasant populations were compared both by crowing count censuses and hunter success. No benefit from fox control was found. "Neither could a significant difference be shown by adjusting the data to compensate for certain disparities in conditions which tended to decrease the relative rate of return on the trapped area. In other words, even by leaning over backward as far as could be justified in favor of fox control in analyzing the data, no appreciable gain in terms of pheasant abundance could be demonstrated. Other factors, apparently, were exerting a stronger limiting influence...than fox predation." Fox control for the sake of pheasants would not be justified even if it were cheap, which it isn't. Any real control by trapping would cost many thousands of dollars per county each year.

Robinson, Weldon B. SOME OBSERVATIONS ON COYOTE PREDATION IN YELLOWSTONE NATIONAL PARK. Journal of Mammalogy 33(4): 470-476. Nov. 1952.
Eye-witness accounts of coyote hunting tactics, and of coyote success in preying on elk calves despite the opposition of mother elk. Many coyote kills are so completely devoured and carried away that little trace of them remains after a few hours. Experiments with captives suggest that adult male coyotes may take good care of young ones.

Thompson, Daniel Q. TRAVEL, RANGE, AND FOOD HABITS OF TIMBER WOLVES IN WISCONSIN. Journal of Mammalogy 33(4): 429-442, graph. Nov. 1952.
Routes followed were quite irregular both in direction of travel and frequency of use. There was no evidence of regularly used circuits, but the same roads and trails were followed at different times. Scats of coyotes and wolves were analyzed and identified by size groups. Foods of wolves were determined. Deer were the chief food at all seasons; fawn remains were in about half the summer scats. Deer were numerous and the few wolves did not affect herd growth and overpopulation. Wolves are being exterminated in Wisconsin. Each family of wolves uses about 150 square miles, so large wilderness areas should be maintained for them. Normal forest uses should be made of these areas, but access should be difficult enough that wolf hunting and trapping would not be easy. Locked fire lanes and strict adherence to rural zoning are steps in this direction. These measures, taken for other reasons, have allowed the wolves to persist to date, but are gradually giving way.

MAMMALS--DOGS, WOLVES, FOXES--Continued

Wright, Thomas J. A STUDY OF THE FOX IN RHODE ISLAND. Rhode Island Department of Agriculture and Conservation, Pamphlet no. 3, Revised. 1-19 p., illus. Oct. 1952.

Proportions of red and gray foxes in state (now about 10 to 1); history of fox bounties in state; records of bounty payments 1940-52, broken down by area and month; population trend as shown by bounty records (high in early 40's, down by about 50% in recent years); hunting and trapping; legislation; recommendation. Fox hunting is popular, but many people insist on bounties. Most claimants report but one fox; in recent low years only 5 claimants have taken 10 or more. The bounty is largely a subsidy and probably does not control foxes. Legislation is conflicting, but tends to favor hunters and hinder trappers. The author suggests using the bounty funds to hire a good trapper who could trap trouble areas and teach fox trapping to farmers and others, and also take part in other wildlife work. Another suggestion is to reserve certain areas primarily for trapping, others primarily for hunting.

MAMMALS—CATS

Bue, Gerald T. and Milton H. Stenlund. ARE THERE MOUNTAIN LIONS IN MINNESOTA? Conservation Volunteer 15(89): 32-37. Sept.-Oct. 1952.

Details many sight or track records for the past 7 years. All may be based on 1 or 2 widely traveling lions. Previously the most recent record for the state was in 1897.

Vos, Antoon de and S. Eugene Matel. THE STATUS OF THE LYNX IN CANADA, 1920-1952. Journal of Forestry 50(10): 742-745, map and graph. Oct. 1952.

Data are presented on numbers of pelts harvested annually in each province and territory and Canada as a whole. Fur prices are not obviously correlated with size of harvests. The 9-10 year periodicity is continuing, but with ever lower peaks. The catch of the 1940's was only 39% of the catch of the 1920's. The range is also shrinking, its southern border moving northward (shown by map). Possible causes are overtrapping, reduction of forest habitat by cutting and fire, and lower snowshoe hare populations. Legal protection is being tried in some provinces, but is complicated by trapping for other animals. The bobcat is spreading northward into areas vacated by the lynx, and in certain areas their ranges overlap. A special investigation of the lynx problem is urged.

MAMMALS--BIG GAME--GENERAL

Anonymous. CRIPPLE KILL! Wyoming Wild Life 16(12): 12-15, illus. Dec. 1952.

Cripple kill of pronghorns in Wyoming was found to be at least 16% of the number taken by hunters, or about 2,497. It is a factor large enough to require consideration in planning harvests. The 1951 big game crippling loss in Wyoming probably was over 6,000.

Crane, Harold S., Dale A. Jones, and Wallace Jensen. UTAH BIG GAME HARVEST 1951. Utah State Department of Fish and Game, Departmental Information Bulletin no. 4. 1-27 p., maps and graphs. April 1952.

Includes information on: questionnaire sampling method and its accuracy; deer harvest, 1939-51; elk harvest, 1931-51; special seasons; hunting unit system; hunting statistics; recommendations. The system of shooting deer of either sex in the regular season will have to be continued in 1952, and some special hunts will also be needed.

MAMMALS--BIG GAME--GENERAL--Continued

Glassen, Harold W. BIG GAME HUNTING IN GERMANY. Michigan Conservation 21(6): 6-9, illus. Nov.-Dec. 1952.
An interesting article on a system that is strange to us. Europe still has excellent big game hunting. Game is the property of the landowners, who lease hunting rights to rich hunters for 9-year periods. The hunter pays 10¢ per acre per year, pays for all crop damage, and hires a forester-game manager (jaeger). The jaeger determines how much game can be killed and serves as guide. Policy is to take the entire surplus, and harvests are often large. Hunting may go on 6 months of the year, but each kill is marked by cermony.

Hunter, Gilbert N. APPLICATION OF PRACTICAL BIG-GAME MANAGEMENT TECHNIQUES. Transactions of the 17th North American Wildlife Conference. p. 437-447, illus. 1952.
Tells how the complex big-game hunting regulations of Colorado are prepared and outlines the prerequisites for such a program.

Section of Wildlife Investigations on Public Lands. INVENTORY OF BIG-GAME ANIMALS OF THE UNITED STATES, 1950 AND 1951. U. S. Fish and Wildlife Service, Wildlife Leaflet 342. 1 p. + 2 double p. Oct. 1952.
Well arranged tables, 1 for 1950 and 1 for 1951, show kill and estimated total number of each form of big game in each state. There are also cumulative totals for each species and each state. Wild turkey is included in the list for the first time. Species most endangered are woodland caribou (25, only in Idaho), and grizzly bear (reported for only 4 states; over 100 only in Montana). Insert tables give numbers of exotic species of big game by states. These species are boar, fallow deer, and red deer.

MAMMALS--HOOFED (Except deer)

Anonymous. THOSE ELK AGAIN. Nature Magazine 46(2): 89. Feb. 1953.
Recent data on elk shooting in Grand Teton National Park. Few elk are being killed in the park: 189 in 1951, only 27 in 1952. The much needed control is not being achieved, but park policy is being violated and undesirable precedent set. The writer, obviously partisan, feels that present measures are "a silly piece of business" and implies that the Wyoming Game and Fish Commission really is not interested in bringing the herd under proper control.

Beetle, A. A. THE 1951 SURVEY OF SUMMER ELK RANGE IN THE TETON WILDERNESS AREA. Wyoming Univ. (Laramie), Wyo. Range Mangt. no. 51. 5 p. Sept. 1952. [From Journal of Forestry 51(1).]

Bosaeus, Ingmar. MOOSE HUNTING IN SWEDEN. North Dakota Outdoors 15(6): 6-7, 17, illus. Dec. 1952.
How harvests are regulated and how hunting is done. The take is about 20,000 per year. The regular season is only 2-6 days, but there are no bag limits and special seasons of 1 month are granted for areas of high moose population. All hunting is by permission of landowners, often under cooperative agreements for large tracts that are handled as units. Size of harvest is based on size of population, and the herds are healthy. Several hunting methods are described. Trained dogs are used in various ways. Game experts urge the use of dogs because of their value in locating cripples.

Craighead, John J. A BIOLOGICAL AND ECONOMIC APPRAISAL OF THE JACKSON HOLE ELK HERD. New York Zoological Society and Conservation Foundation, 30 E. 40th St., N. Y. 16, N. Y. 1-32, illus. Nov. 1952.
The facts about the most controversial game herd on the continent are here reviewed in detail. Many data gathered through the years by government agencies are combined with other data to form a well rounded picture. Subjects include: history of herd, migrations in early days, winter losses, winter feeding and its costs, populations, range capacity, range conditions, watershed conditions,

MAMMALS--HOOFED (Except deer)—Continued

comparison of land use values, and management suggestions. Management of the herd encounters many complications but the basic facts are simple. There are too many elk for the winter range, it is not practical to supply much more winter range, and feeding is not an adequate answer. Range and watershed conditions in the winter range are poor and even parts of the summer range are seriously overused. Various partial or stop-gap measures are worthy of trial, but the facts remain that elk are not the only consideration in the area and that the herd should be reduced by hunting.

Darling, F. Fraser and A. Starker Leopold. WHAT'S HAPPENING IN ALASKA. Animal Kingdom 55(6): 170-174, illus. Nov.-Dec. 1952.

Fire and climatic change have benefitted the moose, an animal of sub-climax stages, but have restricted the lichen-climax caribou range. Over-grazing by reindeer has resulted in great decline of reindeer and ruin of caribou range. The northern caribou herds seem to be large, possibly larger than the slow-growing and easily over-grazed lichen range can support. These herds should be studied, perhaps reduced. Legal protection of game is now much better than in the past, and is at least adequate in much of southern and central Alaska. Wolves were increasing in recent years but have been reduced by predator control. This may have caused the sharp increase of the Nelchina caribou herd, but elsewhere wolf control has not altered the upward trend of the moose or the downward trend of the caribou. Range condition generally determines trends, and since Alaskan ranges are easily injured, overstocking of big game may be dangerous. As elsewhere, we face the need of preserving climax forms (e.g. caribou), whereas we can manage forms of earlier successional stages (e.g. moose and deer).

Peterson, Randolph L. A REVIEW OF THE LIVING REPRESENTATIVES OF THE GENUS ALCES. Contributions of the Royal Ontario Museum of Zoology and Palaeontology no. 34. 1-30 p., illus. Oct. 1952. $1.35.

A thorough taxonomic study of the moose of North America with as much treatment of those of Eurasia as material permitted. The work is based largely on statistical study of skulls. All living moose are considered subspecies of Alces alces. Three Eurasian and 4 American races are recognized. American races and their chief areas of occurrence are: americana (Eastern Canada), andersoni (Central and Western Canada), shirasi (Rocky Mountains), and gigas (Alaska). The Alaskan race is closely allied to that of Siberia, whence our moose stock came in the Pleistocene. The paper has maps, charts, and photographs.

Poole, A. L., compiler. PRELIMINARY REPORTS OF THE NEW ZEALAND-AMERICAN FIORDLAND EXPEDITION: INVESTIGATIONS IN FIORDLAND, NEW ZEALAND, IN 1949. New Zealand Department of Scientific and Industrial Research (Wellington, N. Z.), Bulletin 103. 1-99 p., illus. 1951. 7s. 6d.

A large expedition with Olaus J. Murie as scientific leader was made with the primary aim of studying the American elk (wapiti) in a very wild, rough, wet portion of the Fiordland National Park, southwestern New Zealand. Several members of the party worked on wapiti and red deer, while other worked on climate, vegetation, the forest, small mammals, invertebrates, fishes, birds, and other topics. This publication summarizes their findings in a series of brief and to some extent preliminary papers. American workers will be most interested in the 9 papers (20 pages) by Murie and others on wapiti and red deer. These discuss establishment, numbers, distribution, environmental adjustments, mortality, hybridization, parasites, foods, relation to vegetation, carrying capacity, and recommendations. There are about 500 wapiti in the area but more red deer. They appear to be hybridizing. Many wapiti are killed by falls from cliffs or steep slopes. Vegetation is already changing under browse pressure. For preservation of habitat and of wapiti quality, it is recommended that red deer be eliminated insofar as possible, and that the wapiti population be selectively limited, with range condition used as a guide.

MAMMALS--HOOFED (Except deer)--Continued

Russo, John P. WHAT ABOUT BIGHORN? Arizona Wildlife-Sportsman 23(12): 8-12, illus. Dec. 1952.
A limited number of bighorn rams soon will be hunted in Arizona. Authorities wish to spread the sex ratio, to get animals for disease study, and to generate more public interest in the welfare of bighorns. This article reviews the history of bighorns in the state, explains the hunt, and presents some fine photographs of the animals.

Shoemaker, Carl D. THE JACKSON HOLE ELK HERD. Wyoming Wild Life 16(11): 4-8, illus. Nov. 1952. [Reprinted from Oct. 1, 1952 issue of Conservation News.]
This article outlines the general problem--whether or not elk should be hunted in Grand Teton National Park--and its legal background. An exchange of letters between the Governor of Wyoming and the Secretary of Interior is reproduced. The biological facts underlying the controversy are scarcely mentioned.

White, Claude E., Jr. BIGHORN. Colorado Conservation 1(2): 1-4, illus. Mar.-Apr. 1952.
Biology and management of bighorns in Colorado. There are about 3100 in the state. In addition to various small herds, there are 52 herds of 4 to 786 sheep that are kept under observation. Only 14 of these 52 herds are increasing; the rest are stable or decreasing. Thirty to 35% of a normal 58-60% increase is lost during the first winter because of predation and disease. Both factors increase with snow depth, lack of protection, and food scarcity. Mating is in November and December, lambing in May, June, and July. Travel is slight and mostly caused by deep snow at high altitudes. Sheep may not reach good winter range 3 miles away. Herds grow slowly, 12% a year in one successful release. Habitat requirements are described. Transplanting is done with care to see that all habitat needs are met and that predators are reduced in advance if necessary. Hunting is not anticipated for the near future.

MAMMALS--DEER

Aldous, Shaler E. DEER BROWSE CLIPPING STUDY IN THE LAKE STATES REGION. Journal of Wildlife Management 16(4): 401-409, illus. Oct. 1952.
Response of white cedar and various hardwoods to different degrees of artificial browsing.

Allen, John M. 3000 WHITE-TAILS CAN BE WRONG. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-13 p., map. 1951.
Tells of studies of the southern Indiana deer herd and about the 1951 hunt.

Anonymous. MULE--WHITETAIL HYBRIDS. North Dakota Outdoors 15(7): 9, illus. Jan. 1953.
Reports, with photographs, production of hybrids in captivity and states that such hybridization is unknown in the wild.

Bartlett, I. H. DEER HUNTING REGULATIONS LIBERALIZED. Michigan Conservation 21(6): 3-5, illus. Nov.-Dec. 1952.
In 1952 Michigan hunters may shoot any deer in the last 3 days of the season in the northern part of the Lower Peninsula. This article explains the need for and effect of heavy deer harvesting, using Wisconsin experience as an example, and tells how present regulations were decided upon. Public opinion made it necessary for Michigan to embark upon any-deer harvesting with caution. Biologists would prefer more liberal regulations.

MAMMALS--DEER--Continued

Berner, Lester M. DEER MANAGEMENT PROBLEMS AND TECHNIQUES IN THE BLACK HILLS. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-9 p., graph. 1951.
Tells in detail how herds are studied and managed. "The carrying capacity is decreasing because of destructive browsing and because of the ponderosa pine crown closure. More intensive timber management practices would aid the deer. Since increased browse productivity after thinning is the result of increased productivity of the existing plants, the deer herd should be held at a level low enough to insure the survival of the existing plants." Otherwise the range might be set back for decades.

Davis, Richard B. THE USE OF RUMEN CONTENTS DATA IN A STUDY OF DEER-CATTLE COMPETITION AND "ANIMAL EQUIVALENCE". Transactions of the 17th North American Wildlife Conference. p. 448-458, illus. 1952.
Studies of deer and cattle foods in south Texas demonstrated that animal equivalence varies greatly by season and by food class. A set of ratios are proposed for more accurate expression of competition and equivalence. Application to herd management is discussed.

Davis, Richard Bratton. A STUDY OF SOME INTERRELATIONSHIPS OF A NATIVE SOUTH TEXAS RANGE, ITS CATTLE, AND ITS DEER. Ph. D. thesis, Texas A. and M. College, 1952.

Dunkeson, Robert L. DEER RANGE APPRAISAL IN THE OZARKS. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-10 p. 1951.
The deer winter on mast, fruits, seeds, and green forbs, but eat few twigs. Overpopulation is difficult to determine from range condition even where known to occur. Mast is critical; lack of it may result in early depletion of other winter foods.

Forbes, Stanley E. WHAT HAPPENED TO YOUR DEER? Pennsylvania Game News 23(9): 35-39, illus. Dec. 1952.
Frequency and distribution in Pennsylvania of deer mortality from various causes, including hunting, damage control, traffic, starvation, etc. Hunters account for approximately 60-70% of the total deer mortality. Most losses, except from traffic, occur in 13 northcentral counties, the deer problem area.

Guettinger, R. C. WISCONSIN DEER SEASONS--A REVIEW. Michigan Conservation 21(6): 10-12. Nov.-Dec. 1952.
Summary of the history of Wisconsin deer and attempts to manage them by hunting. Time and again public opinion has prevented proper regulation of the herd. Benefits of recent any-deer seasons are listed. Great as the benefits are, many people (especially those in the resort industry) want larger numbers of deer present and are pressing for greater protection, even for a closed season in 1952. [Regulations for 1952 represent a compromise that should permit build-up of the herd. The public wants "plenty of deer," not a well controlled herd.]

Guettinger, Ralph C. SEX AND AGE RATIO STUDIES OF WISCONSIN DEER. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-3 p. 1951.

Gunvalson, Vernon E. DEER DON'T DIE FROM LEAD ALONE! Conservation Volunteer 15(89): 45-48. Sept.-Oct. 1952.
Summarizes data on non-hunting mortality in Minnesota for many years, with special attention to conditions in Superior National Forest. Causes and seasonal frequency of deaths are discussed with the aid of 3 tables. 40,000 deer may have perished in the state during the winter of 1949-50.

MAMMALS--DEER--Continued

Hunter, Carl. TRAPPING AND RESTOCKING WHITE-TAILED DEER IN ARKANSAS. Arkansas Game and Fish Commission, PR project 17-D. 1-17 p., illus. Oct. 1952. [Paper presented at Southeastern Wildlife Society Meeting, Oct. 20-22, 1952, Savannah, Ga.]
A thorough discussion of traps, techniques, and problems, based on handling over 2000 deer during several years. The state still has excellent deer range that requires stocking. Present stocking is with deer captured in the state.

Jenkins, James H. THE EXTIRPATION AND RESTORATION OF NORTH GEORGIA DEER--A SIXTY-YEAR HISTORY. Transactions of the 17th North American Wildlife Conference. p. 472-476. 1952.
In 10 counties of northeastern Georgia, deer were eliminated by 1895 by local people hunting with dogs. About 70 deer were released in refuge areas, beginning in 1928. Managed hunts began in 1940. Hunting with dogs had to be abolished, but predation by dogs continues. There are now about 5000 deer. The legal kill is about 600. There is local overbrowsing, but as expansion of the herd is desired, a doe season is not advisable.

Keener, John M. THE NEED FOR DEER RANGE MANAGEMENT. Wisconsin Conservation Bulletin 17(11): 7-10, illus. Nov. 1952.
Many deer yards in northern Wisconsin have been destroyed beyond the point of return. Overbrowsing, logging of yards, and natural succession all complicate matters. Clipping studies show that certain areas can support only ¼ the desired deer herd, or about 6-8 deer per square mile. Winter range cannot be restored to original condition unless all deer are removed for a long time. Since this is out of the question it is necessary to use other measures: small, periodic cutting for timber sales near yards; non-commercial cutting and stand improvement; disking of sodded areas to encourage woody growth; controlled burns. Burns are the most promising, but do not have public favor. At best, however, only relatively small, normal populations can be maintained.

Kimball, Thomas L. and Allan G. Watkins. THE KAIBAB NORTH COOPERATIVE DEER-LIVESTOCK FORAGE RELATIONSHIP STUDY. Arizona Game and Fish Commission. 1-77 p., illus. 1951.
In 1946, when the famous Kaibab deer herd was again beginning to destroy its range, the Forest Service and the Arizona Game and Fish Commission undertook cooperative management, and in 1947 they launched the study reported here. The paper describes the area and the history of its herds, reports detailed range evaluations, and tells of food habits analyses for deer and cattle of the area. It was found that deer use little grass (2.9%) but that cattle compete with them in using a good bit of browse (16.9%). All range types were classed as "poor with doubtful trend." It was agreed to limit cattle to the level of moderate grass use (the area is a game preserve on Forest Service land where multiple use is practiced), and to reduce deer to "numbers compatible with the available forage which is now being damaged." Overshooting is preferred to range damage, for deer come back faster than the vegetation does.

Leopold, A. Starker. ECOLOGICAL ASPECTS OF DEER PRODUCTION ON FOREST LANDS. Proceedings of the United Nations Scientific Conference on the Conservation and Utilization of Resources, 17 August-6 September 1949, Lake Success, N. Y. Volume 7: 205-207, graph. 1949.
Deer are primarily a product of brushy, sub-climax forest stages. With proper stocking, deer may improve their own range by inducing much sprout growth. The proper level of stocking is essential: with understocking vegetation soon grows out of reach; with overstocking the range is ruined. Livestock may help maintain the desired stage--again with proper stocking. Plant succession can be manipulated to benefit deer by rotational cutting, controlled burning on suitable sites, or use of herbicides. Some areas need fertilization, reseeding, or water development. Increased production often will pay for these measures. Suitably heavy harvests, of course, are indispensable, and must be geared to range conditions.

MAMMALS--DEER--Continued

Lindsey, James Shotwell. THE WHITE-TAILED DEER IN OKLAHOMA, ECOLOGY, AND MANAGEMENT, AND PRODUCTION. Ph. D. thesis, Oklahoma A. & M. College, July 1951. Published by Oklahoma Game and Fish Department, 1952. See WR 68, p. 23.

Rosen, Merton N. and Arthur I. Bischoff. THE RELATION OF HEMATOLOGY TO CONDITION IN CALIFORNIA DEER. Transactions of the 17th North American Wildlife Conference. p. 482-496, illus. 1952.
Detailed report on study of blood of average deer and deer living under unfavorable range conditions. In one part of the work it was found that hemoglobin concentration and red cell count dropped during near starvation in winter. Application of statistical methods is demonstrated.

Stenlund, Milton H. WHY NOT SHOOT THEM? Outdoor Life 110(5): 50-51, 102-104, illus. Nov. 1952.
Facts about the deer herds of many states are simply presented to convince the layman that deer herds must be properly harvested and controlled even if this means shooting does, and that game departments must have the power to regulate seasons.

Sweet, J. C. and Charles W. Wright. A COMPARISON OF WEIGHT AND ANTLER DEVELOPMENT BETWEEN WHITE-TAILED DEER IN NORTHERN AND SOUTHERN NEW JERSEY. New Jersey Outdoors 3(3): 3-8, illus. Sept. 1952.
Figures are given to show that deer in Northern New Jersey, where soil fertility is higher and food conditions are better, grow larger and have better antlers than deer of Southern New Jersey. Northern yearling bucks average 107.7 pounds, 33.5 pounds heavier than southern ones; many of them have 6 or 8-point antlers, while most yearling bucks from Southern New Jersey merely have spikes. Tabular data are supplied.

Upchurch, M. L. and T. S. Brown. LAND, LIVESTOCK AND DEER IN THE MILFORD-DOYLE AREA OF NORTHEASTERN CALIFORNIA. California Agricultural Extension Service (Susanville). 32 p., illus. Nov. 1951. [From Journal of Forestry 50(12).]

Whitlock, S. C. A STORY OF TWO BUCKS. Michigan Conservation 21(6): 29-30, illus. Nov.-Dec. 1952.
Photographs show 2 bucks, 1 of them with 8-point antlers, the other with mere buttons. Both were yearlings, less than 1½ years old. The button buck came from overbrowsed range. In such country some of the "dry does" are actually bucks of this type. The 8-pointer came from Southern Michigan where food conditions were good. There more than a third of the yearling bucks have 8 points, and most of them have 3 to 10 points. The moral is that proper herd control produces better bucks and better survival as well as better forests.

MAMMALS--MARINE

Fisher, H. D. HARP SEALS OF THE NORTHWEST ATLANTIC. Fisheries Research Board of Canada, Atlantic Biological Station (St. Andrews, N. B.), Circular, General Series, no. 20. 1-4 p., graphs and map. Sept. 1952.
Concise report of research findings and their bearing on management of Phoca groenlandica. Topics include: seasonal movements, whelping areas, reproduction, age at maturity, age groups in population as determined by sections of canine teeth, natural and harvest mortality, estimates of population, catch statistics, conservation measures. Present harvesting is too heavy for the population to support. Pups are the seals desired, and exploitation of them is permissable, but breeding adults should be protected, either by agreement to spare adult females, or by closing season before the date when much killing of adults is practicable.

MAMMALS--OTHER GROUPS

Beidleman, Richard G. POSSUMS...AND POINTS WEST. Colorado Conservation 1(4): 2-5, illus. July-Aug. 1952.
History and present status of opossum in Colorado. The species has reached, and is increasing in, the eastern part of the state. Some have been transplanted to the western part by sportsmen.

Hartman, Carl G. POSSUMS. University of Texas Press, Austin. 174 p., illus. 1952. $6.00. [Copy of review in A.I.B.S. Bulletin 3(1).]
"This remarkable natural history book reveals the 'private life' of the opossum in a unique fashion. No aspect of its development, its habits, its folklore, its history have been omitted. The more than one hundred illustrations represent a veritable history of animal picturization from the earliest woodcuts to the copper halftones of today. The book provides the reader with a wealth of scientific information as well as a source of delightful entertainment."

Hock, Raymond J. THE OPOSSUM IN ARIZONA. Journal of Mammalogy 33(4): 464-470, map. Nov. 1952.
The opossum apparently has become established in Arizona through introductions. The author anticipates damage to quail, poultry, and fruit crops. He lists a large number of parasites that infest opossums, and points out that some of these, introduced with the opossums, may spread to other animals. Plans for introducing the opossum into more new areas are protested.

Seaman, G. A. THE MONGOOSE AND CARIBBEAN WILDLIFE. Transactions of the 17th North American Wildlife Conference. p. 188-197. 1952.
Food habits and relation to other animals. The mongoose is a decided pest and certainly should not be introduced into the U. S. Some animals have learned to flourish with the mongoose. One of these, the rat, is the animal the mongoose was intended to control. Control methods for mongoose are discussed.

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Bennett, Holly Reed. FALL MIGRATION OF BIRDS AT CHICAGO. Wilson Bulletin 64(4): 197-220. Dec. 1952.
"This paper is a regional study of grounded night migrants, based on a daily census of birds in Lincoln Park, Chicago, during the autumn migrations of 1946 to 1950 inclusive. The writer concludes that the bird waves that characterize the autumn migrations, the wide variation in the season counts of the abundant species, and other features of the census record are due chiefly to variable weather conditions, and particularly to the invasion of the north-central states by cold fronts, followed by periods of strong northerly winds." Quantitative data are given for small birds.

Griffin, Donald R. BIRD NAVIGATION. Biological Reviews of the Cambridge Philosophical Society 27(4): 359-400, illus. Nov. 1952.
A detailed and critical analysis of much recent American and foreign work on this subject. Even references published in 1952 are discussed. There is an appendix (p. 394-400) by Ernst Mayr, "German Experiments on Orientation of Migrating Birds."

Marshall, A. J. THE CONDITION OF THE INTERSTITIAL AND SPERMATOGENETIC TISSUE OF MIGRATORY BIRDS ON ARRIVING IN ENGLAND IN APRIL AND MAY. Proceedings of the Zoological Society of London 122(2): 287-295, illus. Aug. 1952.
Twenty-five males of 8 passerine species were examined. In all, secretion of sex hormone was indicated. Although the birds were collected at various times the gonads were in remarkably uniform condition. All birds had considerable depot fat that did not contain cholesterol. The significance of these facts in relation to migration and passage-song is discussed.

BIRDS--MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION--Continued

Moreau, R. E. THE PLACE OF AFRICA IN THE PALAEARCTIC MIGRATION SYSTEM. Journal of Animal Ecology 21(2): 250-271, map. Nov. 1952.

Steinbacher, Joachim. AVIAN MIGRATION AND MIGRATION RESEARCH (Vogelzug und Vogelzugforschung). Verlag Waldemar Kramer in Frankfurt am Main. 184 p., illus. 1951. [From review by R. O. Bender, Bird-Banding 23(4).]
According to Bender's review, this German book is a scholarly summary of knowledge of migration up to 1949. Many topics are treated authoritatively and on a world basis. An especially strong point of the work is that theories of numerous workers are discussed critically and from broad perspective.

Storer, John H. BIRD AERODYNAMICS. Scientific American 186(4): 24-29. 1952. [From Auk 69(4).]
"An account of how the primaries of the wings of a bird function as does the propeller of an airplane, and how the proximal parts of the bird's wings serve as the wings of a plane."

Van Riper, Walker and E. R. Kalmbach. HOMING NOT HINDERED BY WING MAGNETS. Science 115(2995): 577-578. May 23, 1952.
Report of experiments and review of other experiments that cast doubt on the theory that birds utilize Coriolis force in navigation.

Wilcox, Harry Hammond. THE PELVIC MUSCULATURE OF THE LOON, GAVIA IMMER. American Midland Naturalist 48(3): 513-573, illus. Nov. 1952.

Wolfson, Albert. THE CLOACAL PROTUBERANCE - A MEANS FOR DETERMINING BREEDING CONDITION IN LIVE MALE PASSERINES. Bird-Banding 23(4): 159-165, illus. Oct. 1952.
This method and a method of obtaining sperm are described and illustrated. The techniques are valuable in following breeding cycles.

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Farner, Donald S. THE BIRDS OF CRATER LAKE NATIONAL PARK. University of Kansas Press. xi + 187 p., map, 16 figs. Sept. 1952. Paper bound. [From review by A. H. Miller, Condor 54(6).]
Describes the avian habitats of the park and discusses the status, habitat, abundance, and zonal occurrence of each kind of bird. Available knowledge on nesting, food, and behavior in the park is summarized. Each species account includes specimen data and a resumé of observational evidence. The volume "will be a constantly useful reference for information on the birds of southern Oregon."

Hollom, P. A. D., editor. THE POPULAR HANDBOOK OF BRITISH BIRDS. Witherby, Ltd., London. 424 p., illus. 1952. 45s. (Approx. $7.50.) [From Audubon Magazine 54(6).]
"Many readers will welcome this condensed and cheaper version of Witherby's five-volume 'Handbook of British Birds.' It would be a field guide if it were a little less bulky, as it gives recognition marks, habitat, general habits, food and distribution of all birds occurring in the British Isles, along with colored illustrations of birds (female and young included) and eggs. It is a most useful reference book for European birds."

Saunders, Aretas A. A GUIDE TO BIRD SONGS. Doubleday Co., Garden City, N. Y. xiv + 307 p., illus. 1951. $3.00. [From review by H. H. Axtell, Auk 69(4).]
This edition has been revised only by the addition of songs or calls of 37 species, but the book still "is by far the most satisfactory single source of written information on the identification of bird songs of the northeastern United States, and its contents should become familiar to every ambitious field student of bird identification."

BIRDS--MANUALS, FAUNAS, COMMUNITIES--Continued

Wynne-Edwards, V. C. ZOOLOGY OF THE BAIRD EXPEDITION (1950). I. THE BIRDS OBSERVED IN CENTRAL AND SOUTH-EAST BAFFIN ISLAND. Auk 69(4): 353-391, illus. Oct. 1952.

This long and detailed paper includes information on: numbers and phases of small-billed fulmars at Cape Searle; migrations of king eiders; breeding biology of white gyrfalcons and duck hawks; cyclic low of rock ptarmigans and lemmings; lack of interbreeding between ringed and semipalmated plovers; similar situation in redpolls; presence of hybrid swarms in black guillemots and horned larks; breeding biology of small passerines. "...there is an excess of males and a notable absence of territorial disputes in all six species of small passerines."

BIRDS--NUMBERS AND NUMBER FLUCTUATIONS

Bond, Gorman M., editor. SIXTEENTH BREEDING-BIRD CENSUS. Audubon Field Notes 6(6): 303-324. Dec. 1952.

Thirty eight censuses of breeding birds are reported. Many habitats and many states are represented. The reports are concise but quantitative. Results are expressed in terms of birds per 100 acres.

BIRDS--CONTROL, MORTALITY

Anonymous. NEW HYBRID CORN SHOWS PROMISE OF REDUCING BIRD DAMAGE. Ohio Farm and Home Research 37(279): 87, 96, illus. Nov.-Dec. 1952.

Starlings and various blackbirds often spoil as much as 25% of a corn crop in northern Ohio and some farmers have been forced to grow other crops. A new hybrid that is being developed has such tough, heavy husks that birds cannot get at the kernels. Picking machines may not be able to husk this corn completely.

Gross, Alfred O. THE HERRING GULL - CORMORANT CONTROL PROJECT, 1952. U. S. Fish and Wildlife Service (Blake Building, Boston 11, Mass.). 1-14 p. July 1952.

Five northeastern states are cooperating in this project. Eggs are sprayed with a mixture of oil emulsion and formalin. About 95% of the embryos die, but the eggs remain intact and females continue to incubate them, thus failing to reproduce for the season. It is thought that a population decline is beginning to appear in the cormorant. Gulls, however, are rapidly invading southern New England, nearly abandoning breeding areas to the north. The report gives figures on: numbers of eggs treated in recent years (total of 89,381 in 1952); number of eggs sprayed in each area visited; numbers of gull and cormorant eggs in different areas since 1945. There is also a 3½-page section devoted to observations made on other water birds.

Kalmbach, E. R. HOW TO CONTROL CROWS. Pest Control 20(10): 13-14, 78, 80, illus. Oct. 1952.

Stresses the difficulties and uncertainties inherent in control of this wary, migratory bird, and reviews control methods that have been used. None of the methods are entirely satisfactory, but most of them are of value under particular circumstances.

Post, George. THE EFFECTS OF ALDRIN ON BIRDS. Journal of Wildlife Management 16(4): 492-497. Oct. 1952.

Report of laboratory and field studies. Chronic oral toxicity level for pheasants was established. Presence of Aldrin in tissues is of diagnostic value. Aldrin is much more toxic to birds than is Toxaphene or Chlordane, but far less Aldrin than Toxaphene accumulates in the bodies of insects, and secondary poisoning is therefore less of a factor. Range areas in Wyoming were treated with 2 ounces of Aldrin in kerosene per acre for grasshopper control. Control of grasshoppers and many other insects was good. Many birds left the area and some nests failed. A catbird and a merganser were killed by Aldrin, but no damage to grouse was proved. Use of Aldrin in

BIRDS--CONTROL, MORTALITY--Continued

kerosene on water areas is likely to have serious and direct effect on water birds. Small amounts of Aldrin cause cessation of egg production, at least in pheasants. Treatments should be after main bird nesting season when possible.

BIRDS--PARASITES AND DISEASES

Rothschild, Miriam, and Theresa Clay. FLEAS, FLUKES, AND CUCKOOS. A STUDY OF BIRD PARASITES. Philosophical Library, N. Y. (Printed in Great Britain.) xiv + 304 p., illus. 1952. $8.75. [From review by Herbert Friedmann, Scientific Monthly 75(4).]

"This volume is written by two of the world's most assiduous students of the ectoparasites of birds..." It has introductory chapters on parasitism, commensalism, symbiosis, effect of parasitism on host and parasite, and the evolution of parasites. "These preliminary chapters take up a little over 50 pages of the book. The next part, with twice as many pages, deals with bird fleas and bird lice and is, in the opinion of this reviewer, the most valuable part of the book. The third section, of about 100 pages, treats of protozoa, worms, flies, mites, tongue-worms, microparasites, such as bacteria, and of the complicated fauna inhabiting birds' nests." Parasitic and robbing birds are also discussed.

BIRDS--QUAIL

Anonymous. THOMASVILLE SPORTSMAN WINS FIGHT TO INSURE GOOD QUAIL HUNTING. Georgia Game and Fish 1(6): 14-16, illus. Fall 1952.

Popular account of quail management on a Georgia tract. The factor thought most successful and important was free use of artificial feeders. Food patches proved too slow and costly. Blackberry patches and cherry trees are considered valuable to quail, and predator control is practiced. Quail hunting is now good both in woods and fields.

Baumgartner, Frederick M., Meredith J. Morris, John L. Steele, and Jack E. Williams. OKLAHOMA BOBWHITE FOOD RELATIONS. Transactions of the 17th North American Wildlife Conference. p. 338-359, illus. 1952.

Fall and winter food habits in relation to natural and land use areas of the state. Many quantitative data are given. Based on analysis of 1,771 crops collected over 13 years. Importance of a food is indicated by an index number: the sum of rank by volume plus rank by frequency divided by 2.

Glazener, W. C. QUAIL WITH ONE WING. Texas Game and Fish 10(12): 8-10, illus. Nov. 1952.

Results of study of 11,553 bobwhite wings gathered in Texas during 1951 season. Data are broken down by regions to show sex and age groups, number of young per adult hen, and how many were hatched before or after August 15.

Goodrum, Phil. THEY TOOK TO THE WOODS. Outdoor Life 109(1): 32-33, 67, illus. Jan. 1952.

Many southern fields are now clean-farmed and the bobwhites have been forced into the woods. There they must be hunted and there they must be managed. The relatively open longleaf pine woods can be made as productive of quail as good farm land. Measures to accomplish this are outlined. Some of them are proper burning, ploughed fire lanes, plantings of bicolor and other food plants. The timberland owner stands to gain from cooperative quail management because of better fire protection and better grazing conditions. Most farmers, on the other hand, have little to gain by improving quail habitat on their lands and should not be expected to exert themselves in this direction.

Harper, Thomas A. VITAMIN A AND SURVIVAL OF BOBWHITE QUAIL. M. S. thesis, Pennsylvania State College, 1951.

BIRDS--QUAIL--Continued

Lewis, John B. MOBILITY OF BOBWHITES IN BOONE COUNTY, MISSOURI. M. S. thesis, University of Missouri, 1952.

Murphy, Dean A. and Thomas S. Baskett. BOBWHITE MOBILITY IN CENTRAL MISSOURI. Journal of Wildlife Management 16(4): 498-510, illus. Oct. 1952.
A 2-year study of coveys and marked individuals revealed that most covey ranges were less than ½-mile across, and that about half of all individuals had lifetime cruising radii of less than ½-mile. Much information was obtained on seasonal movements, behavior in relation to the individual and covey ranges, and changes in coveys. An area of 4 square miles is proposed as a minimum unit of bobwhite management in the region.

Parmalee, Paul W. CONTRIBUTION TO THE ECOLOGY OF BOBWHITE QUAIL IN THE POST OAK REGION OF TEXAS. Ph. D. thesis, Texas A. and M. College, 1952.

Parmalee, Paul W. ECTO- AND ENDOPARASITES OF THE BOBWHITE: THEIR NUMBERS, SPECIES, AND POSSIBLE IMPORTANCE IN THE HEALTH AND VIGOR OF QUAIL. Transactions of the 17th North American Wildlife Conference. p. 174-188, illus. 1952.
Parasites found in east-central Texas. Only one bird seemed weakened by parasites. Age of quail is not correlated with incidence of parasitism.

Stanford, Jack A. AN EVALUATION OF THE ADOPTION METHOD OF BOBWHITE PROPAGATION IN MISSOURI. Missouri Conservation Commission. 1-25 p., illus. + 9 p. appendix. Aug. 1952.
Detailed report of experiments in which wild-caught, adult quail were encouraged to adopt hatchery-reared chicks. 47% of the cocks and 23% of the hens but only 15% of the pairs would adopt chicks. Birds were released in special areas that were later hunted. "The survival of adopted young birds, as measured by the harvest returns of this investigation, was very small (1.1% return)...A return of 8 per cent of the wild-trapped adult quail released on test areas is the highest survival demonstrated by this investigation." "On the basis of...estimates, the cost of harvested birds totaled $50.26 per chick, and $37.63 per harvested adult, banded bird."

Stanford, Jack A. AN EVALUATION OF THE ADOPTION METHOD OF BOBWHITE QUAIL PROPAGATION. Transactions of the 17th North American Wildlife Conference. p. 330-337, illus. 1952.

Williams, Gordon R. THE CALIFORNIA QUAIL IN NEW ZEALAND. Journal of Wildlife Management 16(4): 460-483, illus. Oct. 1952.
Topics discussed in this long and detailed paper include: introductions; distribution; factors affecting distribution (climate, altitude, vegetation, land use); predation; other causes of mortality; types of habitat; populations; reproduction; sex and age ratios; foods (winter and summer); weights and measurements; races present.

BIRDS--PHEASANTS

Ball, K. E. NESTING OF THE RING-NECKED PHEASANT ON PELEE ISLAND, ONTARIO. Canadian Field Naturalist 66(3): 71-80, graphs. May-June 1952.
Based on study of hundreds of nests in 1947 and 1948. Subjects discussed include: nest sites; behavior of nesting hens; numbers of eggs laid and numbers hatched; percentage of nests in which eggs hatched; dates of laying and hatching; nesting density; distribution of nests in relation to cover; size and color of eggs; percentage of fertile eggs; frequency and success of nests in hayfields; causes of egg losses; predation; nest parasitism. Data from the literature are used throughout; 38 references are cited.

BIRDS--PHEASANTS--Continued

Buss, Irven O., Carl V. Swanson and David H. Woodside. THE SIGNIFICANCE OF ADULT PHEASANT MORTALITIES IN SPRING TO FALL POPULATIONS. Transactions of the 17th North American Wildlife Conference. p. 269-284, illus. 1952.
Many data are given on pheasant breeding and hunter success in southeastern Washington, 1948-50, in relation to weather. The authors postulate that cold, wet weather at the peak of the 1950 breeding season caused prolonged laying, and that the extra stress resulted in heavy mortality of adults. Survivors bred well, so the fall sex ratio was favorable although the total number of pheasants was small.

Dorr, Donald E. FINAL REPORT OF THE MAINE PHEASANT INVESTIGATION (FEDERAL AID PROJECT 15-R). [Cover title: Maine Pheasant Investigation.] Maine Department of Inland Fisheries and Game, Game Division Bulletin no. 2. 1-47 p., illus. July 1952.
Maine has little if any good pheasant habitat, so stocking is mainly for shooting. The season is long and birds of either sex may be shot. Over 21,000 game farm birds per year are released. The best time and best age to release birds for maximal returns are discussed at length. Of the birds shot, 59% were released the same year. The author studied the survival and fate of released birds and found that the year-to-year survival was only 3.7%. The spring population is very small, but most losses of released birds occur before winter sets in, many of them soon after release. 42,029 game farm birds were banded and released in 3 years, but only 2,483 were reported shot. Band returns varied from 3.4% for spring releases to 10.9% for releases during the hunting season. The cost per bird bagged is not discussed. Availability of pheasant hunting had been thought to relieve pressure on grouse, but was found to do so to only a small extent. [It is stated in the introduction and conclusions that nearly half of all released birds are harvested. The reader may calculate from figures on p. 27 that 43.5% of pheasants released in 1950 were shot. These challenging estimates are not explained and the band returns mentioned above provide no understanding of them.]

Hopkins, Joe. PHEASANT HABITAT DEVELOPMENT IN IOWA. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-3 p. 1951.
Bottlenecks in Iowa pheasant production are lack of nesting cover and lack of winter cover. Both needs are being met by multiflora rose and other plants. The state has 2 programs for getting wildlife cover on private land. These are the Farmer-Sportsman Cooperative program and the PR Farm Game Habitat Development program. The functioning and extent of both are described. Public interest in the work is growing.

Kozicky, Edward L. VARIATIONS IN TWO SPRING INDICES OF MALE RING-NECKED PHEASANT POPULATIONS. Journal of Wildlife Management 16(4): 429-437, illus. Oct. 1952.
Statistical evaluation of the crowing count and the roadside count of males and of factors affecting them. Recommendations are made for their more effective use.

Kozicky, Edward L., George O. Henderson, Paul G. Homeyer, and Everett B. Speaker. THE ADEQUACY OF THE FALL ROADSIDE PHEASANT CENSUS IN IOWA. Transactions of the 17th North American Wildlife Conference. p. 293-305, illus. 1952.
Statistical evaluation of these censuses, in which 3 routes in each county are driven according to plan and during a limited period. The census method is validated. Many comments are made on requirements for dependability in such censuses.

McLaughlin, Charles L. A BIRD IN THE HAND. Massachusetts Wildlife, Nov. 1952: 2-3. Nov. 1952.
Brief data on survival and production of pheasants in Massachusetts. 40 to 65% of the hens are shot illegally or accidentally during the hunting season. Two hens left at the end of the season will produce roughly 5 cocks and 4 hens that will be present when the next hunting season opens. 75% of released pheasants are lost before the season opens. Ten hens must be stocked to replace 1 taken illegally.

BIRDS--PHEASANTS--Continued

Miller, Wilford L. PHEASANT OLD-YOUNG RATIO. North Dakota Outdoors 15(7): 17. Jan. 1953.
Based on data from hunting in North Dakota, 1952. Ratio in southeastern counties was 1 adult cock to 3 young, nearly normal. But in southwestern counties the ratio was only 1 to 1.33. The hatch was good but something happened to chicks between July and hunting season. Statewide age ratios are given for the years 1947-52.

Salinger, Herbert E. A PHEASANT BREEDING POPULATION STUDY ON IRRIGATED LANDS IN SOUTHWEST IDAHO. Journal of Wildlife Management 16(4): 409-418, illus. Oct. 1952.
Nesting, nesting success, and mortality, with particular reference to their relation to farming practices. Many of these practices adversely affected the birds; mowing caused an especially large number of losses. Only 5 of 270 observed nests were successful.

Seubert, John L. OBSERVATIONS ON THE RENESTING BEHAVIOR OF THE RING-NECKED PHEASANT. Transactions of the 17th North American Wildlife Conference. p. 305-329, illus. 1952.
Detailed, quantitative report of experimental study, with much information on behavior, nesting, and ovulation. Renesting occurs less often, and the period between nestings is longer, if disruption takes place late in incubation. Beyond a certain point in the season, renesting rarely occurs. Second clutches average smaller.

Stokes, Allen W. PHEASANT SURVIVAL STUDIES ON PELEE ISLAND, ONTARIO, 1946-1950. Transactions of the 17th North American Wildlife Conference. p. 285-293, illus. 1952.
The high rate of year-to-year survival on Pelee Island is compared with that found elsewhere. Reasons are given for the success of pheasants on Pelee Island. Where habitat is favorable, winter losses may be as low as 25%. Studies showing when and how losses occur are essential for intelligent habitat improvement.

BIRDS--GROUSE, PARTRIDGE, ETC.

Ammann, G. A. RESULTS OF SHARPTAILED GROUSE PLANTINGS IN MICHIGAN. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-6 p. 1951.
Eight of 23 plantings were partly or wholly successful. The author discusses factors involved and makes detailed recommendations for handling future plantings.

Baker, Maurice F. POPULATION CHANGES OF THE GREATER PRAIRIE CHICKEN IN KANSAS. Transactions of the 17th North American Wildlife Conference. p. 359-366, illus. 1952.
History in state; usage of 1 flock range, 1949-51; sex and age ratios in 7 counties, 1950-51; probable population trends in state since 1920. Habitat must have at least 39% tall grass prairie. A 10-year cycle is apparent. Shooting may have sped declines: season should be opened on upswing of cycle, not downswing. Population declines occurred in 1950 and 1951: breeding season weather was bad both years. Renesting ability is weak, and production is far less than in bobwhite.

Blomquist, Wallace. UPLAND GAME AGE AND SEX RATIOS. North Dakota Outdoors 15(7): 17. Jan. 1953.
Age and/or sex ratios for sharptails, Hungarian partridge, and ruffed grouse, North Dakota 1952 hunting season. Ratios were unfavorable, but reasons for the poor breeding season are not known.

Davis, Grant. A STUDY OF THE POPULATION AND BIOLOGY OF THE RUFFED GROUSE IN CENTRAL PENNSYLVANIA. M. S. thesis, Pennsylvania State College, June 1951.

BIRDS--GROUSE, PARTRIDGE, ETC.--Continued

De Leonardis, Salvatore. A STUDY OF THE ROCK AND WILLOW PTARMIGAN (LAGOPUS MUTUS L. AND LAGOPUS LAGOPUS L.). M. S. thesis, University of Alaska. 1-74 p. 1952.

Hale, James B. RUFFED GROUSE POPULATION INVENTORY METHODS. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-7 p. 1951.
Evaluation of methods and recommendations for a series of economical checks that will yield reliable data on season-to-season as well as year-to-year fluctuations in population level.

Janson, Reuel G. PRAIRIE GROUSE POPULATION TRENDS IN SOUTH DAKOTA. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-5 p. 1951.
Population fluctuations in prairie chickens and sharptails; age and sex ratios in sharptails. Weather, through its effect on cover, seems to be a limiting factor. Cycles in the state usually but not always coincide with those of other areas. Populations in 1950 and 1951 were the lowest in 7 or 8 years.

Sandfort, Wayne W. CHUKAR PARTRIDGE. Colorado Conservation 1(2): 15-19, illus. March-April 1952.
Early plantings of pen-reared chukars seemed unsuccessful in Colorado, but some birds survived in rough, rocky regiohs. Fifteen colonies are known and some of them are thriving. Data are given on reproduction and other habits in the state. Adults feed mainly on seeds of common weeds and grasses, especially cheatgrass. Water is required daily, so water development should be helpful. New colonies are being established readily through the use of hardy, wild-trapped birds.

Sheads, Richard D. A STUDY OF THE RUFFED GROUSE ON THE STONE VALLEY EXPERIMENTAL FOREST IN HUNTINGDON COUNTY, PENNSYLVANIA. M. S. thesis, Pennsylvania State College, August 1951.

BIRDS--TURKEY

Chapman, Floyd B. OHIO TACKLES TURKEY RESTORATION. Ohio Conservation Bulletin 17(1): 20-21, illus. Jan. 1953.
Fifty-three wild turkeys have been stocked on the Zaleski State Forest in Vinton County, where there is plenty of oak mast. Plans call for release of 200 more next year in other sections of southern and eastern Ohio.

Jourde, A. Earl and Grace Jourde. KEEP THE GOBBLERS FLYING. Natural History 61(9): 398-402, illus. Nov. 1952.
Popular account of a trip to photograph birds of what is said to be the last remaining flock of the Rio Grande turkey, M. g. intermedia. The turkeys have responded well to protection from man and predators, and some live-trapping for transplanting is being done by the state. The area (on the Clear Fork of the Brazos, 185 miles west of Dallas, Texas) is in danger of being flooded by the Bureau of Reclamation. The authors believe that this flooding would mean the end of the race.

Sadler, Kenneth. TRENDS IN TURKEYS. Missouri Conservationist 13(12): 6-7, 10, illus. Dec. 1952.
Turkeys in Missouri were common in the old days, but they declined and their range shrank greatly because of habitat destruction and overhunting. With protection and refuges they increased for a few years but are now in another slow decline, even in refuges. The suspected cause is competition with increasing numbers of deer. The best solution is to build up quality of range. This will require much cooperation from private landowners as well as public agencies.

BIRDS--DOVES AND PIGEONS

Aldrich, John W. THE SOURCE OF MIGRANT MOURNING DOVES IN SOUTHERN FLORIDA. Journal of Wildlife Management 16(4): 447-456, illus. Oct. 1952.
The early open season on doves in southern Florida is based on an early flight commonly thought to come from the West Indies. Through study of taxonomic characters and banding records, the author found that the doves involved actually come from much of the eastern U. S. The peculiar and partially reverse migration exhibited is described.

Foote, L. E., H. S. Peters, T. H. McGowan, Clayton Kerley, A. J. Duvall, C. S. Robbins, and F. H. Wagner. INVESTIGATIONS OF METHODS OF APPRAISING THE ABUNDANCE OF MOURNING DOVES. U. S. Fish and Wildlife Service, Special Scientific Report: Wildlife no. 17. 1-53 p., maps and graphs. Sept. 1952.
Consists of 6 papers: Introduction, by Foote and Peters. An Intensive Study of the Call Count as a Census Method for Mourning Doves on the Georgia Piedmont, by McGowan. The Call-road Count as an Index to Breeding Populations of the Mourning Dove in East Tennessee, by Kerley. Investigations of Methods of Determining Abundance of Breeding Mourning Doves in Certain Eastern States, by Duvall and Robbins. A Summary of Mourning Dove Call Count Investigations in Ohio, by Peters. Preliminary Investigations on Mourning Dove Index and Survey Methods in Wisconsin, by Wagner.

Ginn, Wm. E. STATUS OF THE EASTERN MOURNING DOVE IN INDIANA. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-2 p. 1951.
Results of some controlled counts; comparison of coo-counts and road counts; trends in state. The bulk of the state's dove population is in the southern and central regions. The 1951 population is about average for recent years but considerably lower than that of 1940.

Haugen, Arnold O. and James Keeler. MORTALITY OF MOURNING DOVES FROM TRICHOMONIASIS IN ALABAMA DURING 1951. Transactions of the 17th North American Wildlife Conference. p. 141-151, map. 1952.
Report of detailed field studies. Virulence of the disease varies locally. Resident birds are most affected. The 1951 population was about equal to that of 1950 but well below that of 1949. The January 1952 population was the lowest in 10 years. Much more hunting is now needed per dove bagged.

Keeler, James E. MOURNING DOVE MIGRATION. Alabama Conservation 24(3): 14-15, 27, maps. Nov.-Dec. 1952.
General account of the cooperative dove study, with maps showing travels of birds banded or recovered in Alabama.

Neff, Johnson A., compiler. INVENTORY OF BAND-TAILED PIGEON POPULATIONS IN ARIZONA, COLORADO, AND NEW MEXICO, WITH NOTES ON UTAH, 1952. U. S. Fish and Wildlife Service, Denver Wildlife Research Laboratory. 1-26 p. Dec. 1952.
Second report on cooperative project. Tabulations, providing a transcript of all reports of specific numbers of birds, are by states, national forests, and 3 time periods. Comments on food habits are given. "By comparing the 1952 figures with those of the 1951 inventory, a disturbing reduction becomes apparent. For Arizona the reduction under 1951 is 27.2%, for Colorado, 47.9%, and for New Mexico, 54.9%." Reasons for reductions are not known, but the compiler "has often stated the opinion that the band-tailed pigeon was the most erratic and the least predictable of all our game species."

Peters, Harold S. MOURNING DOVE CENSUS TECHNIQUES. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-5 p., map. 1951.
Plea for assistance in the cooperative dove study project; account of geographic distribution of transects in eastern U. S.; instructions for making the transect counts.

BIRDS--DOVES AND PIGEONS--Continued

Schorger, A. W. INTRODUCTION OF THE DOMESTIC PIGEON. Auk 69(4): 462-463. Oct. 1952.
Apropos to a suggestion that trichomoniasis introduced with the domestic pigeon may have hastened the extinction of the passenger pigeon, the author points out (1) that there is no record of such a disease in the passenger pigeon, and (2) that there are many records of pigeons being brought over and established in this country 300 years before the passenger pigeon became extinct. Several records are cited.

Wagner, Fred H. PRELIMINARY INVESTIGATIONS ON MOURNING DOVE INDEX AND SURVEY METHODS IN WISCONSIN. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-5 p., graph. 1951.
Technical analyses of 3 coo-count transects in 1951, mail carrier surveys, and flock observations by Conservation Department personnel. Tentative conclusions are drawn about the sensitivity and utilization of these methods, and about distribution of dove populations in the state.

BIRDS--WATERFOWL

Atkeson, Thomas Z. and Lawrence S. Givens. UPLAND FARMING AS A METHOD OF SUPPLEMENTING THE NATURAL WATERFOWL FOOD SUPPLY IN THE SOUTHEAST. Journal of Wildlife Management 16(4): 442-446. Oct. 1952.
Production of seed or browse crops near water areas has been extremely useful in attracting and supporting waterfowl. This paper gives much helpful information on the best crops for different sites and purposes and on how they can be handled most effectively and economically.

Brackbill, Hervey. LIGHT INTENSITY AND WATERFOWL FLIGHT; PRE-FLIGHT ACTIVITIES. Wilson Bulletin 64(4): 242-244. Dec. 1952.
Data on times of day at which various migrating waterfowl left Baltimore reservoirs, and on their behavior before leaving.

Cartwright, B. W. A COMPARISON OF POTENTIAL WITH ACTUAL WATERFOWL PRODUCTION. Transactions of the 17th North American Wildlife Conference. p. 131-138. 1952.
Demonstrates use of a simple formula by which one may compute productivity and population of a marsh if certain values are known.

Cartwright, Bertram W. and Jean T. Law. WATERFOWL BANDING 1939-1950 BY DUCKS UNLIMITED. A PROGRESS REPORT COVERING BANDING OPERATIONS BY DUCKS UNLIMITED DURING THE PERIOD 1939-1950 IN MANITOBA, SASKATCHEWAN, ALBERTA AND BRITISH COLUMBIA AND AN ANALYSIS OF RECOVERIES FROM BIRDS THUS BANDED. Ducks Unlimited, Winnipeg, Canada. 1-53 p., illus. Oct. 1952.
Analyses are based on recoveries of 6,855 birds of the 63,826 banded. Data are presented mainly in tables and maps, with brief discussions of such topics as recoveries by species, age and sex; relationship of individual states to prairie breeding grounds; migration routes; post-breeding northward movement; longevity and life expectancy. Evidence is given that ducks, especially females, strongly tend to return to their natal marshes for breeding. Heavy, early shooting can greatly reduce or eliminate a local population, thus leaving the marsh "burned out" for some years. Late nesters, particularly redhead and lesser scaup, are especially vulnerable to these disasters. Another point of interest is that many birds from the Prairie Provinces are shot in California.

Chattin, John E. APPRAISAL OF CALIFORNIA WATERFOWL CONCENTRATIONS BY AERIAL PHOTOGRAPHY. Transactions of the 17th North American Wildlife Conference. p. 421-426. 1952.
Values of and details of using this technique.

BIRDS--WATERFOWL--Continued

Cowan, I. McT. and James Hatter. A TRAP AND TECHNIQUE FOR THE CAPTURE OF DIVING WATERFOWL. Journal of Wildlife Management 16(4): 438-441, illus. Oct. 1952.
Descriptions and diagrams of a trap having deep lead nets, and of procedure used in driving ducks into the trap on large, deep lakes.

Hancock, Hunter McRae. FOOD HABITS OF WATERFOWL MIGRATING THROUGH PAYNE COUNTY, OKLAHOMA. M. S. thesis, Oklahoma A. & M. College, January 1951.

Harris, Stanley W. A THROW NET FOR CAPTURING FEMALE WATERFOWL ON THE NEST. Journal of Wildlife Management 16(4): 515, illus. Oct. 1952.

Hjelle, Brandt. DUCKS BACK FROM WINTER VACATION! North Dakota Outdoors 14(10): 6-7, map. April 1952.
Includes table showing relative abundance of duck species nesting in North Dakota, and map of state showing relative amounts of duck nesting in different areas.

Hochbaum, H. Albert. REPORT FROM THE DELTA STATION: A REPORT COVERING ACTIVITIES AND ACHIEVEMENTS OF THE DELTA WATERFOWL RESEARCH STATION IN THE PRAIRIE PROVINCES OF CANADA. North American Wildlife Foundation, Wire Bldg., Washington 5, D. C. 1-24 p., illus. 1952.
Tells of the station's history and facilities and gives an interesting review of work accomplished or in progress.

Jahn, Laurence R. and Ruth L. Hine. WHAT ABOUT GOOSE REFUGES? Wisconsin Conservation Bulletin 17(12): 12-13, illus. Dec. 1952.
Wisconsin has found that creation of new goose refuges does not lessen use of previous refuges but simply causes more geese to stop in the state. About 40,000 Canadas now pause in Wisconsin for varying periods. "The honkers will probably hold their own in the Mississippi flyway states if refuges established for them are not gunning traps, if they furnish sufficient feed to last the flock until freezing weather pushes them south, and if the harvest of geese both in the north and in the south does not exceed 20 per cent of the total flyway population."

Janzen, D. H. THE RIGHT KIND OF WATER. Conservation Volunteer 15(89): 5-8. Sept.-Oct. 1952.
Prairie potholes are essential to our waterfowl and big impoundments are no substitute. "...over 32,000 potholes in the Dakotas and Minnesota are being drained each year, and in the five-year period 1945-1950, 16 per cent of Minnesota's potholes were drained." Both drainage and irrigation threaten further loss. This is not necessarily progress for agriculture; often it may be better to keep water on the land. Waterfowl are a great enough resource to justify consideration. "All land-planning agencies should be required by law to protect wetland habitat whenever it is in the national interest to do so. Waterfowl is a national responsibility. No public agency should promote, engineer, and subsidize its destruction...We can have conservation practices which will hold the water on the land where it is needed instead of rushing it to rivers and lakes."

Leopold, A. Starker and Robert H. Smith. NUMBERS AND WINTER DISTRIBUTION OF PACIFIC BLACK BRANT IN NORTH AMERICA. California Fish and Game 39(1): 95-101, map. Jan. 1953.
The 1952 winter inventory gave counts for all important areas. Observed total was 174,740. About 63% of the birds winter in Baja California, and conditions there are still favorable. Estimated annual kill in California is 16,000; in British Columbia, 6,200. Hunting pressure seems to be increasing but there is no evidence as yet of overshooting. Sudden increase of crop damage in 1951-52 suggests that something may be wrong with the eelgrass beds, for the same thing happened when disease (Labyrinthula) struck eelgrass in 1940-41.

BIRDS--WATERFOWL--Continued

Lewis, Harrison F. MANAGEMENT OF DUCKS AND GEESE IN CANADA. Transactions of the 17th North American Wildlife Conference. p. 100-106. 1952.
Tells how surveys are made, how regulations are set, and what is being done in research and habitat restoration.

Lynch, John. OPERATION EYEBROW. Audubon Magazine 54(5): 322-329, illus. Sept.-Oct. 1952.
Popular, narrative account of locating duck concentrations in the Prairie Provinces, and driving hundreds of ducks into traps for mass banding. Planes, air-boats, trucks, and great portable traps are used, but men in the mud are still indispensable.

Maasdyk, I. G. van. WILDFOWL AND WADERS IN THE NETHERLANDS. Conseil International de la Chasse, The Hague. May 1951. [From review by A. de Vos, Journal of Wildlife Management 16(4).]
According to the informative review cited, this paper is an analysis of the status and conservation of waterfowl and shorebirds in Holland. Several species are still decreasing, largely because of more intensive land use. The present system of protection in Holland, here described, is a model for other European countries. "For information regarding copies of this paper and other Dutch reports please write reviewer [de Vos] or Mr. T. Lebret, Park de Griffioen 17, Middelburg, Holland."

McLaughlin, Charles L. and David Grice. THE EFFECTIVENESS OF LARGE-SCALE ERECTION OF WOOD DUCK BOXES AS A MANAGEMENT PROCEDURE. Transactions of the 17th North American Wildlife Conference. p. 242-259, illus. 1952.
From 1949 to 1951, about 6,000 boxes were put up for wood ducks in Massachusetts. This paper reports on degree of usage, nesting success, and problems encountered. Raccoon predation was serious in some areas, but this can be lessened by suitable construction. Nest box usage gives best index of wood duck abundance.

Naylor, Albert E. PRODUCTION OF THE CANADA GOOSE ON HONEY LAKE REFUGE, LASSEN COUNTY, CALIFORNIA. California Fish and Game 39(1): 83-94, illus. Jan. 1953.
Nesting dates, nesting cover, egg laying and hatching, success, fertility, management. Average clutch size was 5.5. Of 360 nests, 68.3% were successful. Hatching success of eggs was 82.6%. Desertion accounted for 23.9% of unsuccessful nests and destruction for 7.8%. Two percent of the eggs were infertile. Management measures suggested are preseason predator control, construction of nesting islands, and enough control of vegetation to give better visibility in otherwise suitable nesting sites.

Nelson, Harvey K. HYBRIDIZATION OF CANADA GEESE WITH BLUE GEESE IN THE WILD. Auk 69(4): 425-428, illus. Oct. 1952.

Patterson, Robert L. and Robert M. Ballou. A REPORT ON THE WYOMING WATERFOWL SURVEY. Wyoming Wild Life 16(11): 16-19, 22-23, illus. Nov. 1952.
Breeding conditions and numbers of the different species found in various drainages. Average brood size for all ducks was 6.4; for Canada geese, 4.24.

Peppard, John William. THE WATERFOWL OF A CAT-TAIL MARSH IN CENTRAL MAINE. vi + 98 p., illus. M. S. thesis, University of Maine, June 1951.
Reports studies made from spring of 1950 through spring of 1951 on a long-time productive marsh that in recent years has become less productive because of unnaturally fluctuating water levels and industrial pollution. Emphasis is on behavior and biology of the waterfowl throughout the season. Some of the subjects discussed are migration, nesting success, brood banding, food habits, hunting season, and predation by snapping turtles. Control of water levels and pollution are recommended, but both will be difficult because of industrial complications.--Neil Hotchkiss.

BIRDS--WATERFOWL--Continued

Peterson, Elmer. MARSH DRAINAGE AND WATERFOWL. Transactions of the 17th North American Wildlife Conference. p. 123-131. 1952.
Discusses the waterfowl importance of various regions in South Dakota, extent of pothole drainage, value of new stock ponds, and possible solutions. Seven percent of the state's potholes are drained each year; 10,700 of them have vanished in the last 5 years. Stock ponds help but do not compensate fully. The federal government should not subsidize pothole drainage. Some potholes should be bought or leased. Education of the public will help, as will formation of wise state and federal water use policies.

Poole, Daniel A. CURRENT STUDIES ON BOTULISM IN DUCKS. Transactions of the 17th North American Wildlife Conference. p. 160-167, illus. 1952.
Report of experiments on producing botulism in the field under controlled conditions.

Ryder, Ronald A. WATERFOWL PRODUCTION IN THE SAN LUIS VALLEY, COLORADO. M. S. thesis, Colorado A & M College, 1951.

Saunders, George B. WATERFOWL WINTERING GROUNDS OF MEXICO. Transactions of the 17th North American Wildlife Conference. p. 89-100. 1952.
Describes the vast wintering grounds of Mexico and their waterfowl populations. Most of the areas are relatively inaccessible and hunting pressure is light. The Mexican government is making good headway with protection.

Scouler, Lloyd. CROP DEPREDATION BY WATERFOWL. Transactions of the 17th North American Wildlife Conference. p. 115-123. 1952.
Reviews habitat shrinkage and crop damage in California, with special reference to conflict between Fish & Wildlife Service and state groups concerning hunting regulations. The author upholds the local views.

Singleton, J. R. HIS MAJESTY THE MALLARD. Texas Game and Fish 10(12): 6-7, illus. Nov. 1952.
About a quarter of the ducks killed on the Texas Coast are mallards. This article tells where these birds come from, as shown by bands, what habitat conditions and food plants favor them, and how the plants can be obtained and grown.

Smith, Richard H. MORE DUCKS FOR EASTERN MONTANA. Montana Wildlife 2(3): 10-11, illus. Autumn 1952.
Review of duck occurrence and breeding in artificial ponds. Ponds studied averaged 3.2 acres. Seven species of puddle ducks bred on them. Mallard, pintail, and bluewinged teal accounted for 75% of production, with teal rearing the largest broods. An average of 1.7 broods was reared on each pond. Broods at flying time averaged 5, making 9 ducks per pond, with a production of about 2 ducks per square mile. 90% of the ponds that did not have broods were less than 3 acres. The importance of protecting shore lines from overgrazing is stressed.

Sweeney, William D. NEBRASKA DUCK FACTORY. Outdoor Nebraska 31(1): 9-11, illus. Winter [Jan. 1953.].
Nature and duck production of the sandhills. The many small lakes, temporary and permanent, provide nesting sites for about 85,000 pairs. Annual production is roughly 400,000. Kill in the state is around 500,000. Species composition of the breeding populations is listed; bluewinged teal outnumber the others combined, but there are marked differences in species abundance between the 3 major regions of the sandhills.

BIRDS--WATERFOWL--Continued

U. S. Fish and Wildlife Service. REPORT FROM THE FLYWAYS. No. 1. 1-6 p. Jan. 1953.

This series is intended as a newsletter for all people concerned with migratory game birds, especially waterfowl. Issues are expected to appear frequently. The present issue briefly discusses waterfowl and waterfowl hunting conditions in different parts of the country, effects of radar on waterfowl flights, results of Maine's woodcock season, occurrence of shot in waterfowl, resistance of diving ducks to starvation, and a study of wildlife effects of mosquito-control spraying. The accounts are presented as news notes of current interest rather than as technical contributions.

Yocom, Charles F. TECHNIQUES USED TO INCREASE NESTING OF CANADA GEESE. Journal of Wildlife Management 16(4): 425-428, illus. Oct. 1952.

Nesting of Canada geese in the Northwest has been substantially aided by placing artificial nests in trees. River islands can be made more attractive to geese by moving driftwood and logs, near which geese like to nest, to the middle of the island, where such material is scarce.

BIRDS--CRANES, RAILS, SHOREBIRDS

Aldrich, John W. and others. INVESTIGATIONS OF WOODCOCK, SNIPE AND RAIL IN 1951. U. S. Fish & Wildlife Service, Special Scientific Report: Wildlife no. 14. 1-58 p., illus. Jan. 1952.

Nine reports on woodcock, 4 on snipe, and 1 on clapper rails. The purpose of these cooperative studies is to provide a better basis for regulation of hunting. The reports are mainly on censuses made in various regions from Canada to Louisiana, but some of the reports contain information on methods, banding results, effect of weather, and habits of the birds.

Longwell, John R. A STUDY OF THE AMERICAN WOODCOCK ON A SELECTED AREA IN CENTRAL PENNSYLVANIA. M. S. thesis, Pennsylvania State College, 1951.

Schwartz, Charles W. and Elizabeth Reeder Schwartz. THE HAWAIIAN COOT. Auk 69(4): 446-449, illus. Oct. 1952.

Distribution and abundance; habitats; breeding; measurements; lice; food; future. The bird is expected to survive in Hawaii, but its numbers will soon be reduced by marsh reclamation.

U. S. Fish & Wildlife Service and Canadian Wildlife Service. INVESTIGATIONS OF WOODCOCK, SNIPE, AND RAILS IN 1952. U. S. Fish & Wildlife Service, Special Scientific Report: Wildlife no. 18. 1-55 p., illus. No date. [Nov. 1952]

Thirteen reports: Introduction, by J. W. Aldrich. Wintering Woodcock Populations in West-Central Louisiana, 1951-1952, by V. H. Reid and Phil Goodrum. Woodcock Singing Counts--Eastern Canada, 1952, by V. E. F. Solman. Woodcock Census Studies in Northeastern United States - 1952, by H. L. Mendall. Woodcock Singing Ground Counts in Delaware, Maryland, North Carolina, New Jersey, Pennsylvania, West Virginia, and Ohio, by P. F. English. Woodcock Singing Ground Counts in Central Northern States in 1952, by J. W. Aldrich. Report on Woodcock Investigations in Massachusetts - Spring 1952, by W. G. Sheldon. Wilson's Snipe Wintering Ground Studies, 1951-52, by C. S. Robbins. Wilson's Snipe "Singing" Counts in Eastern Canada - 1952, by V. E. F. Solman. Winnowing Counts as a Measure of Wilson's Snipe Breeding Populations, by C. S. Robbins. Wilson's Snipe Breeding Ground Studies in Northern States in 1952, by C. S. Robbins. Wilson's Snipe Breeding Population Study at Grays Lake, Idaho - 1952, by T. D. Burleigh. Breeding Populations of Clapper Rail at Chincoteague, Virginia - 1952, by R. E. Stewart.

OTHER BIRDS

Broley, Myrtle Jeanne. EAGLE MAN. Pellegrini and Cudahy. 210 p., illus. 1952. $3.50. [From review by Dean Amadon, Natural History 61(9).]
The story of Charles L. Broley, who, after his retirement from banking, banded some 1200 bald eagles and became an expert on their habits and conservation. This account, written by his wife, carries the story through the banding season of 1952.

Killpack, Merlin L. and Don N. Crittenden. STARLINGS AS WINTER RESIDENTS IN THE UINTA BASIN, UTAH. Condor 54(6): 338-344, illus. Nov.-Dec. 1952.
Occurrence, migration, food habits, roosting. Starlings winter in the area, some probably staying all winter, but as yet there is no proof that starlings breed in Utah.

Neff, Johnson A. and Brooke Meanley. EXPERIENCES IN BANDING BLACKBIRDS IN EASTERN ARKANSAS. Bird-Banding 23(4): 154-157, illus. Oct. 1952.
Need for banding large numbers of grackles, redwings, and cowbirds in area of rice destruction led to new methods of mass capture. Two types of traps (described) were successful, but best results were obtained by catching birds by hand from large winter roosts in low trees. Working with headlights on dark nights, 2 men can band 300 birds in 90 minutes.

Uttendörfer, Otto. NEW FINDINGS CONCERNING THE FOOD HABITS OF BIRDS OF PREY (Neue Ergebnisse über die Ernährung der Greifvögel und Eulen). Eugen Ulmer, Stuttgart/z.Z. Ludwigsburg. 230 p. 1952. DM 12 (about $3.00). [From review by Frances Hamerstrom, Bird-Banding 23(4).]
"This book is not merely a compendium of raptor food habits, but a scholarly and extensive study of many of the ecological interrelationships of birds of prey. Comparative food lists and methods of hunting of raptors in different parts of their ranges, not only in Europe, but also in other parts of the world are discussed in detail. The relationships of different species of raptors to each other and to prey species especially during the nesting season are handled in a masterly manner. There are several references to accelerated raptor reproduction in good food years. The bulk of the book is composed of a discussion of each species of raptor taken up in turn...The presentation of newer concepts on predation and the good coverage on American species makes this an important reference...Where quantitative material has been available, such as gram intake of prey or number of pellets analyzed, these data have been presented with sufficient completeness to make it possible for the reader to attempt geographic, temporal or interspecific comparisons...Considerable attention has been paid to the status of the European birds of prey and the factors limiting them...In addition to the voluminous amount of data presented from the literature and to their more recent findings in the supplement, the authors give 345,626 vertebrate prey items on which they have made the determinations themselves prior to 1947. The authors concluded that no closely related forms of Central European raptors are in direct competition for food."

Woodgerd, Wesley. FOOD HABITS OF THE GOLDEN EAGLE. Journal of Wildlife Management 16(4): 457-459. Oct. 1952.
"Fifty-one golden eagle stomachs were analyzed as to frequency of occurrence of the various species of animals taken for food. The main item in the diet was found to be jack rabbit, with twenty-two stomachs containing only jack rabbit and four containing jack rabbit along with other species. The occurrence of antelope was next, with three stomachs containing only antelope and five having antelope in conjunction with other species. Instances of golden eagle predation are cited, and the lifting power of eagles is discussed." This eagle does prey on antelope, but in general it is an opportunist, feeding on what is available.

REPTILES AND AMPHIBIANS

Anonymous. BULLFROG FARMING AND FROGGING IN FLORIDA. Florida Department of Agriculture, Bulletin no. 56. 1-80 p., illus. Jan. 1952. [Much expanded revision of 12-page bulletin of same number and title written by Ralph Stoutamire and published Jan. 1932.]

This attractive bulletin is printed on glazed paper and is well illustrated. It contains information on kinds of frogs, commercial value of frogs, frog farming (20 pages), frog hunting, life history, frog rearing in Japan and France, numerous recipes for cooking, and instructions for butchering and shipping. Hunting and marketing of wild frogs apparently is a profitable industry and no doubt the bulletin contains useful data on it. Otherwise this paper is a remarkable document, apparently compiled by an uncritical person unfamiliar with the subject. Much of the material is copied directly from various old publications. The impression is strongly conveyed that frog farming for meat production is a going business, and one successful "farmer" is quoted at length. One gathers that anyone well supplied with money and perspicacity can succeed. [Dr. A. F. Carr informs me that the successful "farmer" quoted is supported in part by a tremendous number of tourist admissions. He knows of several persons who have failed after sincere efforts, but of no others who have succeeded. J. A. Oliver (Animal Kingdom 55: 38-45) has recently written of frog farming as a fraud. J. N. Gowanloch (Louisiana Department of Wild Life and Fisheries, 4th Biennial Report, 1952, pages 443-445) states that in 20 years as Chief Biologist for Louisiana he never discovered any profitable, artificial, frog farm. He also points out that "under such artificial conditions of propagation, the great number of parasites and other diseased conditions to which frogs are subject increase beyond control." Furthermore, it is difficult to believe that the feeding problem has been solved. In short, frog farming should not be recommended.]

Cagle, Fred R. THE STATUS OF THE TURTLES GRAPTEMYS PULCHRA BAUR AND GRAPTEMYS BARBOURI CARR AND MARCHAND, WITH NOTES ON THEIR NATURAL HISTORY. Copeia 1952(4): 223-234, illus. Dec. 1952.

Carpenter, Charles C. COMPARATIVE ECOLOGY OF THE COMMON GARTER SNAKE (THAMNOPHIS S. SIRTALIS), THE RIBBON SNAKE (THAMNOPHIS S. SAURITUS), AND BUTLER'S GARTER SNAKE (THAMNOPHIS BUTLERI) IN MIXED POPULATIONS. Ecological Monographs 22(4): 235-258, illus. Oct. 1952.

Contains much good information on field biology of species named. Topics include: study areas (chiefly near Ann Arbor, Mich.), food habits, seasonal activity, habitat preferences, range of activity (distances moved), populations, breeding potential, size groups, mortality and predation, hibernation. The main conclusion is that the 3 related species can live in the same area because their foods and habitats differ to a considerable degree.

Carpenter, Charles C. GROWTH AND MATURITY OF THE THREE SPECIES OF THAMNOPHIS IN MICHIGAN. Copeia 1952(4): 237-243, illus. Dec. 1952.

Cohen, Nathan W. COMPARATIVE RATES OF DEHYDRATION AND HYDRATION IN SOME CALIFORNIA SALAMANDERS. Ecology 33(4): 462-479, illus. Oct. 1952.

Results of laboratory experiments with Ensatina, Aneides, and Triturus are related to habits and habitats of these animals.

Kezer, James. THYROXIN-INDUCED METAMORPHOSIS OF THE NEOTENIC SALAMANDERS EURYCEA TYNERENSIS AND EURYCEA NEOTENES. Copeia 1952(4): 234-237, illus. Dec. 1952.

Knowlton, George F. SAGEBRUSH SWIFT--VALUABLE TO MAN. Utah Fish and Game Bulletin 9(8): 3. Sept. 1952.

Stomach contents of 510 specimens of Sceloporus graciosus from Utah.

REPTILES AND AMPHIBIANS--Continued

Manville, Richard H. THE SNAKES OF MICHIGAN. Michigan State College, Extension Bulletin 315. 1-20 p., 1 fig. June 1952.
A popular, general treatment, with brief accounts of distribution in state, habits, habitats, and characteristics of each species. Introductory sections review the natural history of snakes.

Mullally, Don P. HABITS AND MINIMUM TEMPERATURES OF THE TOAD BUFO BOREAS HALOPHILUS. Copeia 1952(4): 274-276. Dec. 1952.
Interesting findings on control of activity by light, and on adjustment of habits to low environmental temperatures. "The minimum body temperature for normal activity is about 3°C. Below this the toads retire, and at about -2°C. the animals freeze solid and die. Their affinity for rodent holes allows them to exist in great numbers in what could otherwise be climatically a very unfavorable habitat." Critical and voluntary minimum body temperatures probably are not more than 2-3°C. apart.

Oliver, James A. and Leonard J. Goss. ANTIVENIN AVAILABLE FOR THE TREATMENT OF SNAKEBITE. Copeia 1952(4): 270-272. Dec. 1952.
Lists 17 types of antivenin now being produced, tells what venoms they are effective against, and where they are produced. All available antivenins of the world are included. [We are informed by Wyeth Inc., manufacturers of North American Antisnakebite Serum, that the coralsnake antivenin here listed as made by the Instituto Butantan, Sao Paulo, Brasil, is no longer in production.]

Porges, Nandor. SNAKE VENOMS, THEIR BIOCHEMISTRY AND MODE OF ACTION. Science 117(3029): 47-51. Jan. 16, 1953.

Savage, Jay M. STUDIES ON THE LIZARD FAMILY XANTUSIIDAE I. THE SYSTEMATIC STATUS OF THE BAJA CALIFORNIA NIGHT LIZARDS ALLIED TO XANTUSIA VIGILIS, WITH THE DESCRIPTION OF A NEW SUBSPECIES. American Midland Naturalist 48(2): 467-479, illus. Sept. 1952.

Savage, R. Maxwell. ECOLOGICAL, PHYSIOLOGICAL AND ANATOMICAL OBSERVATIONS ON SOME SPECIES OF ANURAN TADPOLES. Proceedings of the Zoological Society of London 122(2): 467-514, illus. Aug. 1952.
A detailed account. Emphasis is on foods, feeding, digestion, respiration, and growth of British species, especially Rana temporaria and Bufo bufo, but other forms, including Microhylids, are considered.

Williams, Roy Winston. A SURVEY OF THE HELMINTHS OF THE SNAPPING TURTLE, CHELYDRA SERPENTINA, FROM OKLAHOMA. M. S. thesis, Oklahoma A. & M. College, May 1952.

Wright, A. H. and A. A. Wright. LIST OF THE SNAKES OF THE UNITED STATES AND CANADA BY STATES AND PROVINCES. American Midland Naturalist 48(3): 574-603. Nov. 1952.
Two lists are presented for each state or province: a list of "accredited" forms (i.e., those generally believed to occur naturally) and a "problematic" list. The problematic list mainly includes forms of questionable occurrence or questionable validity. References are given for forms of the problematic list. [The lists are of real value but should not be followed without scrutiny. For example, the wisdom of placing the coralsnake on the accredited lists for Indiana, Illinois, and Kentucky is doubtful. This species is not mentioned at all under Ohio and is placed in the problematic lists for Missouri, Tennessee, and Arkansas. There are acceptable records for southern Arkansas, but the coralsnake probably does not occur naturally in the other states named.]

FISHES

Beckman, William C. GUIDE TO THE FISHES OF COLORADO. University of Colorado Museum (Boulder, Colo.), Leaflet no. 11. 1-110 p., illus. Dec. 1952. $1.00.

A useful state handbook. Illustrated, semitechnical keys are given for all species and higher groups. All technical terms used are explained. Descriptions are given for each family, genus and species. Subspecies are mentioned and some are characterized. Each species account consists of: line drawing with one or more diagnostic characters pointed out; list of diagnostic characters; brief color description; brief statement of life history and habits; distribution in state; status and importance. Papers of this type are extremely valuable and many more of them are to be desired. They need not be excessively long and costly, as this booklet demonstrates.

Carbine, W. F., compiler. DOCTORAL DISSERTATIONS ON THE MANAGEMENT AND ECOLOGY OF FISHERIES. ADDITIONAL LISTINGS--1952. U. S. Fish and Wildlife Service, Special Scientific Report--Fisheries no. 87. 1-4 p. Oct. 1952.

"This is a revision of the Special Scientific Report: Fisheries no. 31. This list is composed of titles of doctoral theses written between 1934 and the 1950-1951 school year, on subjects related to the ecology and management of fisheries."

Lagler, Karl F. FRESHWATER FISHERY BIOLOGY. Wm. C. Brown, Dubuque, Iowa. 360 p., illus. 1952. $5.75. [From review by F. T. Knapp, Scientific Monthly 75(5).]

According to the review cited, this is a good and much needed text. "Throughout the book the author never forgets his purpose--that of presenting methods for investigating and manipulating fish populations and their environment in order to obtain the greatest sustained yields." The reference list is up to date and complete.

Linder, Allan David. THE FISHES OF THE BLUE RIVER IN OKLAHOMA, WITH DESCRIPTIONS OF TWO NEW PERCID HYBRID COMBINATIONS. M. S. thesis, Oklahoma A. & M. College, May 1952.

INVERTEBRATES

Clark, Austin H. and Leila F. Clark. THE BUTTERFLIES OF VIRGINIA. Smithsonian Miscellaneous Collections 116(7): 239 p., illus. 1951. [From review by J. F. G. Clarke, Proceedings of the Entomological Society of Washington 54(2).]

Photographs, keys, and distributional data make this detailed study valuable to both amateurs and professionals.

Dillon, Lawrence S. THE MELOIDAE (COLEOPTERA) OF TEXAS. American Midland Naturalist 48(2): 330-420, illus. Sept. 1952.

Dunlap, Paul M. TAXONOMIC CHARACTERISTICS OF THE DECAPOD CRUSTACEANS OF THE SUBFAMILY CAMBARINAE WITH DESCRIPTIONS OF TWO NEW SPECIES AND TWO KEYS TO SPECIES. M. S. thesis, Oklahoma A. & M. College, May 1951.

Morris, Percy A. A FIELD GUIDE TO SHELLS OF THE PACIFIC COAST AND HAWAII. Houghton Mifflin, Boston. 220 p., illus. 1952. $3.75. [From review by R. T. Abbott, Scientific Monthly 75(6).]

"Californian collectors should have little difficulty in recognizing most of their finds either in the text or among the many illustrations." The treatment of Hawaiian shells is inadequate.

Wingo, Curtis W. THE COCCINELLIDAE (COLEOPTERA) OF THE UPPER MISSISSIPPI BASIN. Iowa State College Journal of Science 27(1): 15-53, illus. Oct. 1952.

The area covered includes the states of Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, and the parts of Kansas and Nebraska east of the 100th meridian. The paper contains keys to all species and higher groups, distributional data for each species, and descriptions and synonymy for many species.

VEGETATION--GENERAL, ECOLOGY, CONTROL, TECHNIQUES

Chapman, V. J. SEAWEEDS AND THEIR USES. Pitman, N. Y. xiv + 287 p., illus. 1952. $6.00. [From review by E. G. Young, Scientific Monthly 75(5).]

Sauer, Jonathan D. A GEOGRAPHY OF POKEWEED. Annals of the Missouri Botanical Garden 39(2): 113-125, illus. May 1952.
"The distribution patterns of poke suggest possible answers to the questions of what peculiar characteristics have enabled poke to exploit disturbed places, what habitats it occupied in pre-human times, and how the species has been affected by its life with man." Some of these characteristics are broad tolerance of light, microclimate, and soil conditions, berries attractive to birds, and long-lived seeds. "...poke is bound to disturbed sites and nowhere does it seem to belong to a stable plant association."--Neil Hotchkiss.

VEGETATION--FLORAS AND COMMUNITIES

Billington, Cecil. FERNS OF MICHIGAN. Cranbrook Institute of Science, Bulletin 32. vii + 239 p., illus. 1952. $5.00.
A handbook useful to laymen and professionals. Identification is simplified. All Michigan pteridophytes are described, and there are keys to all forms. Included are drawings and state distribution maps for each species, several clear photos of fertile fronds, a pictorial glossary, and a lengthy introduction that discusses fern biology, economics, cultivation, collecting, and folklore.--Neil Hotchkiss.

Reed, John F. THE VEGETATION OF THE JACKSON HOLE WILDLIFE PARK, WYOMING. American Midland Naturalist 48(3): 700-729, graph. Nov. 1952.
Describes the area, its soils, climate, history, and plant communities, and presents an annotated list of the vascular plants. The paper should be a valuable aid to any biologist working in the area.

Shreve, Forrest and Ira L. Wiggins. VEGETATION AND FLORA OF THE SONORAN DESERT. VOLUME I, VEGETATION OF THE SONORAN DESERT, by Forrest Shreve. Carnegie Institution of Washington, Publication 591. xii + 192 p., illus. 1951. $3.75, cloth.
A thorough description of the vegetation of a region which comprises the southwestern third of Arizona, southeastern California to a little west and north of Salton Sea, Western Sonora, and much of Baja California. The relation of this desert to the Chihuahuan, Great Basin, and Mohave Deserts is indicated; and its physical features, perennial vegetation, ephemeral herbaceous vegetation, and the ecological features of characteristic species are described in detail. A colored map shows 7 subdivisions; maps show the distribution of 26 species; and about 40 large photos show vegetation and topography.--N. Hotchkiss.

Swink, Floyd A. A PHENOLOGICAL STUDY OF THE FLORA OF THE CHICAGO REGION. American Midland Naturalist 48(3): 758-768. Nov. 1952.
Earliest and latest normal blooming dates of higher plants.

VEGETATION--FOREST

Baker, Harold L. and Adon Poli. AREA AND OWNERSHIP OF FOREST LAND IN SONOMA COUNTY, CALIFORNIA. U. S. Forest Service, California Forest and Range Experiment Station (Berkeley, Calif.), Forest Survey Release no. 14. 1-23 p., illus. Sept. 1952.
Statistical data. Includes colored map showing age classes and types of forest stands.

Brenner, Louis G., Jr. FOREST QUADRAT STUDIES AT THE ARBORETUM AND OBSERVATIONS ON FOREST SUCCESSION. Annals of the Missouri Botanical Garden 39(2): 165-172, illus. May 1952.
At Gray Summit, Mo. See Beilmann & Brenner WR 67, p. 38.--Neil Hotchkiss.

VEGETATION--FOREST--Continued

Daubenmire, R. FOREST VEGETATION OF NORTHERN IDAHO AND ADJACENT WASHINGTON, AND ITS BEARING ON CONCEPTS OF VEGETATION CLASSIFICATION. Ecological Monographs 22(4): 301-330, illus. Oct. 1952.
The conifer-dominated forests of the region are described in terms of 13 climax associations. Species of the undergrowth are given much weight in determining associations and unions. Seral stages of the associations are discussed. Recognition of indicator unions is stressed. The author emphasizes that a thorough knowledge of associations and their varied seral stages is highly important in forestry and wildlife management. Such knowledge allows prediction of the value of a site for particular purposes and of its response to given management measures. This approach is used to some extent by many workers, but the author believes that its use can be greatly expanded with the aid of ecological specialists, and that much trial-and-error work can be saved. In connection with this the author makes a number of suggestions for studying areas and making ecological maps of them for practical purposes.

Dayton, William A. UNITED STATES TREE BOOKS; A BIBLIOGRAPHY OF TREE IDENTIFICATION. U. S. Department of Agriculture, Bibliographical Bulletin no. 20. 1-32 p. August 1952. 15¢ from Superintendent of Documents.
References on tree and shrub identification are listed for the country as a whole and for each region and state, including Alaska.

Finn, Raymond F. FOLIAR NITROGEN AND GROWTH OF CERTAIN MIXED AND PURE FOREST PLANTINGS. Journal of Forestry 51(1): 31-33. Jan. 1953.
Black locust improves conditions for growth of several other tree species, especially yellow poplar, black walnut, and black cherry. Locust contributes available nitrogen.

Hall, Marion Trufant. VARIATION AND HYBRIDIZATION IN JUNIPERUS. Annals of the Missouri Botanical Garden 39(1): 1-64, illus. Feb. 1952.
Deals particularly with J. virginiana of the eastern half of the United States and J. ashei of the Edwards Plateau, Arbuckle Mts., and Ozarks. Includes much ecological information.--Neil Hotchkiss.

Highsmith, Richard M., Jr. and John L. Beh. TILLAMOOK BURN: THE REGENERATION OF A FOREST. Scientific Monthly 75(3): 139-148, illus. Sept. 1952.
Describes and maps the burns of various years, discusses salvage operations, and reviews the rehabilitation program. "The regeneration of the Tillamook Burn is a large-scale experiment in rehabilitation of forest resources that may well serve as the prototype for other fire-killed areas in the world."

Kucera, Clair L. AN ECOLOGICAL STUDY OF A HARDWOOD FOREST AREA IN CENTRAL IOWA. Ecological Monographs 22(4): 283-299, illus. Oct. 1952.
Characteristics of stands of varied types are correlated with microclimate, chemistry and moisture of soils, topography, and other site factors.

Limstrom, G. A. EFFECTS OF GRADING STRIP-MINED LANDS ON THE EARLY SURVIVAL AND GROWTH OF PLANTED TREES. U. S. Forest Service, Central States Forest Experiment Station (Columbus 15, Ohio), Technical Paper no. 130. 1-35 p., illus. Nov. 1952.
Report of experiments and survey of literature (22 titles cited). Grading or levelling, often legally required, is of little value to trees and is commonly harmful because of soil compaction. "On banks composed mainly of sticky, plastic clay, and especially in areas with extreme variations in rainfall, survival and growth were better on the ungraded banks, the differences being highly significant. The effects also varied by species."

McCormack, James F. FOREST STATISTICS FOR SOUTHEAST GEORGIA, 1952. U. S. Forest Service, Southeastern Forest Experiment Station (Asheville, N. C.), Forest Survey Release no. 39. ii + 38 p., illus. Oct. 1952.

VEGETATION--FOREST--Continued

McKay, John W. CHESTNUTS AGAIN! Virginia Wildlife 14(1): 16-18, illus. Jan. 1953.
Discussion of values and care of varieties of Chinese chestnuts, with special reference to wildlife use. The trees would be especially valuable to turkeys, especially one variety that has large crops of small nuts. One trouble with Chinese chestnuts for wildlife use is that they produce relatively few nuts if crowded or shaded by other trees. Also, they do not do well on thin poor soils.

Moravets, F. L. FOREST STATISTICS FOR WAHKIAKUM COUNTY, WASHINGTON. U. S. Forest Service, Pacific Northwest Forest and Range Experiment Station (Portland, Ore.), Forest Survey Report no. 106. vi + 23 p., map and graphs. Oct. 1952.

Parker, Johnson. ENVIRONMENT AND FOREST DISTRIBUTION OF THE PALOUSE RANGE IN NORTHERN IDAHO. Ecology 33(4): 451-461, illus. Oct. 1952.
Study of climatic and site factors affecting local tree distribution.

Southern Forest Survey. FOREST STATISTICS FOR TENNESSEE. U. S. Forest Service, Southern Forest Experiment Station (New Orleans, La.), Forest Survey Release no. 70. ii + 56 p., maps and graphs. June 1952.
Forest acreage, timber volume, growth, and drain. Largely statistical, with brief discussions.

Watts, Lyle F. INSECTS AND DISEASES--THE GREATEST FOREST MENACE. Transactions of the 17th North American Wildlife Conference. p. 20-26. 1952.

Wray, Robert D. FOREST STATISTICS FOR WEST VIRGINIA. U. S. Forest Service, Northeastern Forest Experiment Station (Upper Darby, Pa.), Forest Statistics Series: West Virginia no. 1. 1-48 p. Oct. 1952.
Tabular data and summary discussions of forest area and ownership, forest types and condition, timber volume and quality, growth and drain.

Young, H. C. and Oren Spilker. LONGEVITY OF DISEASE ORGANISM GETTING ATTENTION IN OAK WILT PROJECT. Ohio Farm and Home Research 37(279): 97-98, illus. Nov.-Dec. 1952.
Tests reveal that the fungus seldom lives long in branches or lumber from infected trees that have been cut. Timber products do not transmit the disease. Infected woods can be cleared up by removal of infected trees and all other oaks within 100 feet of them. Removing only infected trees usually retards or eliminates the disease in Ohio.

VEGETATION--PASTURE AND RANGE

Kissinger, N. A., A. C. Hull, and W. T. Vaughn. CHEMICAL CONTROL OF BIG SAGEBRUSH IN CENTRAL WYOMING. U. S. Forest Service, Rocky Mountain Forest and Range Experiment Station (Ft. Collins, Colo.), Station Paper no. 9. 15 p., illus. June 1952. [From Journal of Forestry 50(11).]

LAND, SOILS, WATER, AND CLIMATE

Bach, Roy N. SOME ASPECTS OF NORTH DAKOTA'S SURFACE WATER. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-13 p., map. 1951.
Consists of 2 parts. The first part presents and discusses many quantitative data on the state's water supply, treating such topics as precipitation, run-off, evaporation, and transpiration. The second part deals with the water holding depressions of the state, their classification, histories, fluctuations in water level, numbers and acreages of different types, and distribution in state. One interesting conclusion is that nature may be eliminating water areas in North Dakota much faster than is man.

LAND, SOILS, WATER, AND CLIMATE--Continued

Coleman, C. S. and others. SOIL SURVEY OF CULPEPER COUNTY, VIRGINIA. U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering. Series 1941 no. 3. 1-126 p., illus. Nov. 1952. $2.25 from Superintendent of Documents.

Cook, Robert C. HEALTH--WEALTH--FUTURE SECURITY. Transactions of the 17th North American Wildlife Conference. p. 81-87. 1952.
Attention to other ecological and conservation matters will be of little value if nothing is done about human population problems and human genetic deterioration.

Cook, Robert C. HUMAN FERTILITY: THE MODERN DILEMMA. William Sloan Associates, N. Y. viii + 380 p. 1951. [From review by D. L. Allen, Journal of Wildlife Management 16(4).]
According to the long and informative review cited, this is an excellent analysis of human population problems, an analysis that should be pondered by all planners. It discusses the problems of many parts of the world. It points out that explosive increase often accompanies health programs and grave difficulties ensue. Various natural and artificial population controls are considered. Voluntary controls are now practiced chiefly by the intelligent, enlightened portions of a population, and since intelligence is 4/5 a matter of heredity, intelligence levels tend to sink. In the U. S. and Britain, average I.Q. is declining 2 or more points per generation. The only answer to the problem as a whole is general acceptance of deliberate population regulation.

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Dresser, Cleveland van. ABUSE OF PUBLIC LANDS UNDER THE MINING LAWS. Transactions of the 17th North American Wildlife Conference. p. 8-12. 1952.

Drury, Newton B. RECREATIONAL--NATURAL--AESTHETIC VALUES. Transactions of the 17th North American Wildlife Conference. p. 62-71. 1952.
Importance of these values in land use, and what should be done to protect them on federal lands, especially parks.

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Hope, Clifford R. HIGH DAMS--LOW DAMS--WATERSHED PLANNING. Transactions of the 17th North American Wildlife Conference. p. 55-61. 1952.

Lee, David B. THE STATES AND WATER POLLUTION CONTROL. Transactions of the 17th North American Wildlife Conference. p. 34-43. 1952.

McKinley, Charles. UNCLE SAM IN THE PACIFIC NORTHWEST. University of California Press, Berkeley. 673 p. 1952. $7.50. [From long summary-review by W. B. Greeley, Journal of Forestry 50(11).]
"Prof. McKinley has written a remarkable study of public administration of natural resources in the Columbia Valley. In realistic detail and with many case histories, he tells the story of some twelve federal agencies active in this area; how they function, where they overlap or conflict, and how they cooperate with one another or fail to cooperate. It is the most complete and informative picture of the federal resource bureaus in action that this reviewer has ever seen." Agencies most discussed are Reclamation and Army Engineers. The agencies all have somewhat different objectives, and patch-work legislation promoted by pressure groups has complicated matters. "The

LAND, SOILS, WATER, AND CLIMATE--Continued

author favors, in substance, a National River Development and Management Administration in a 're-named' Department of Interior. It would include the civil functions of the Corps of Engineers, the cost allocations and rate-fixing of the Federal Power Commission, the power transmission and marketing duties of Bonneville Power Administration and other like organizations, and the engineering-construction functions of the Bureau of Reclamation." Administration of the department would be chiefly regional, coordinated from Washington. Public land resource agencies would be consolidated and placed in the Department of Agriculture, and the administration would be mainly regional. Prof. McKinley favors public ownership and distrusts the commercial interests, for his aim is integrated planning.

Packer, Paul E. EFFECTS OF TRAMPLING DISTURBANCE ON WATERSHED CONDITION, RUNOFF, AND EROSION. Journal of Forestry 51(1): 28-31, graphs. Jan. 1953.
Studies of artificial trampling on grass ranges of Idaho where steep slopes, overgrazing, and a naturally unstable granitic soil have combined to create a difficult erosion problem.

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Schwartz, George M. WATER CONSERVATION--TODAY AND TOMORROW. Presented at 13th Midwest Wildlife Conference, Minneapolis, Dec. 12-14, 1951. 1-5 p. 1951.

Symposium. THE LOAD ON THE LAND: A SYMPOSIUM. The Land 11(2): 199-220. Summer 1952.
Five papers: 1. Hunger and Politics, by John Boyd Orr; 2. Will Births Outstrip Resources, by Morton Clurman; 3. Proteins and Reproduction, by William A. Albrecht; 4. Underdeveloped America and the Dollar Curtain, by L. Dudley Stamp; 5. The Earth and the Fullness Thereof, by Firman E. Bear.

Taylor, Walter P. CONSERVATION AND YOU. Transactions of the 17th North American Wildlife Conference. p. 497-503. 1952.
Points out forcefully the extreme importance of conservation in world affairs. The ecological viewpoint is badly needed by the world and we should lose no chance to press for its adoption. Conservation is defined as "the best possible adjustment of living things in general to each other and to their nonliving surroundings." At the present rate of human increase, there will be a person for each yard of the earths' habitable land surface in only 1,600 years. Deterioration of natural resources is more dangerous, and far more insidious, than the atomic bomb.

Voigt, William, Jr. A NATIONAL POLICY FOR RENEWABLE NATURAL RESOURCES. Transactions of the 17th North American Wildlife Conference. p. 47-55. 1952.
Describes Natural Resources Council of America and presents in full its proposed statement of national policy.

CORRECTIONS

The following errors in Wildlife Review numbers 67 and 69 have been called to our attention:

WR 67: 30, 33, 43. "Kiskimies" should read "Koskimies."
WR 69: 3, 54. "Donant" should read "Donat."
WR 69: 3, 56. "Russell, Whittaker J." should read "Whitaker, Russell J."
WR 69: 29. In W. T. Neill's paper, information on the economic effect of the armadillo in Florida was presented as a quotation from a newspaper article and should have been so indicated in Wildlife Review.

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